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Military Affairs

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CONTENTS

GENERAL ISSUES

ARMS SALES

DEFENSE INDUSTRY AND CONVERSION

DOCTRINAL ISSUES

PEACEKEEPING

Patrikeyev on Peace Troops' Tajikistan Role

PM2406135794 Moscow KRASNAYA ZVEZDA in Russian 24 Jun 94 p 2

[Interview with Colonel General Valeriy Patrikeyev, commander of the Collective Peacekeeping Forces in Tajikistan, by Colonel Anatoliy Ladin; date and place not given, published under "Topical Theme" rubric: "Colonel General Valeriy Patrikeyev: It Is Impossible To Live Permanently According to the Laws of Vengeance"—first paragraph is introduction]

[Text] From KRASNAYA ZVEZDA Files [subhead]

Colonel General Valeriy Anisimovich Patrikeyev. Born in 1938. Graduated from Poltava Combined-Arms Command School. Served in the Group of Soviet Forces in Germany, Leningrad Military District, and Sakhalin. Commanded an army corps and combined-arms army, was Far East Military District chief of staff and Volga and Transcaucasus Military Districts commander. Graduate of the General Staff Military Academy. From this year has been commander of the Collective Peacekeeping Forces in Tajikistan.

[Ladin] Valeriy Anisimovich, from 1989 until the end of 1992 you commanded the Transcaucasus Military District. You have survived many dramatic events, and you have experienced for yourself what service in "hot spots" means. Now you are in Tajikistan again. Where do you get the strength to put yourself and your destiny to the test in this way, time after time?

[Patrikeyev] I am a soldier. Like everyone who wears military uniform I took an oath. That says it all. I have never chosen my place of service. When I was recently offered the chance to head the Collective Peacekeeping Forces in Tajikistan, I hardly gave it a second thought. Furthermore, from the newspapers, radio, and television I imagined the situation to be much more "dire" than it actually proved to be. After all, if you believe some correspondents, Tajikistan is still in the conflagration of war. That is not so.

But the "embers" of the past war are still smoldering in some places. They are always being fanned from there—from the opposite bank of the Pyandzh river. Attempts to destabilize the situation are continuing. I felt this keenly when I recently visited the 12th and 13th Border Troops Subunits of the Moscow Border Troops Detachment and subunits of the 201st Motorized Rifle Division, which are covering the most likely salients for a breakthrough by armed groups of gunmen.

For my part, I want to say this: Despite the stabilization of the situation in Tajikistan which has indeed taken shape, I would advise nobody to hope that following this the Collective Peacekeeping Forces will reduce their level of vigilance and combat readiness. I can assure all the sides involved that this will not happen. The troops' summer combat training is in full swing. It is planned to carry out tactical exercises, field firing, and measures to improve the expertise of leading personnel and staffs and to organize collaboration among all levels of the Collective Peacekeeping Forces.

[Ladin] In your opinion what are the prospects for a peaceful settlement of the situation in Tajikistan? As far as I know the attempts made to "clarify relations" between the sides at the negotiating table, specifically in Moscow, have not yet yielded substantial results. The opposition will not accept the current republic leadership's demands regarding the disarmament of illegal formations. But this is an important question. Many weapons of all kinds are still in the population's hands and are now and again put to use somewhere. Society must be rid of them. It is impossible to live permanently according to the laws of vengeance.

There are hopes that the upcoming fall National Assembly elections will change the situation for the better. From conversations with Imomali Rakhmonov and government members I can conclude that they wish to achieve peace through political agreement. How the opposition will behave—that is the question ...

[Ladin] Are you planning to meet with some of its leaders?

[Patrikeyev] I think that in time it will be possible to find a time and place for such a meeting. If only with the aim of expressing my attitude to what is happening.

[Ladin] In your opinion is there any common ground as regards the interests of the current Tajik leadership and the opposition, which is operating outside the republic?

[Patrikeyev] If not, it must be found. For the sake of our own people. It is necessary to go some way toward meeting their expectations.

[Ladin] What would you like to do for your subordinates first and foremost?

[Patrikeyev] We have plenty of problems, as is the case everywhere. First of all I want to make service easier for the officers, NCO's, and enlisted men who are spending a great part of their time in emplacements and trenches. I have seen the faces of these people and have talked to them. They are remarkable people. I will never forget the meetings in military compounds with the wives of officers and warrant officers and with servicewomen. I take my hat off to them for their courage, endurance, and composure. Many sectors of the border zone are still full of the smell of gunpowder. Almost daily the border protectors are having to enter into fire contact with the enemy, who are breaking through the cordon. Border troops subunits are also being shot at from the rear. What a life!

I would like to help them first of all with the regular payment of wages. Pay is being held back for two to three months at a time. Incidentally, some people badly need to send money out to maintain their children and support elderly parents. Not to mention people's other needs! But the situation is such that even if you have the cash you cannot just send it out of Tajikistan. It is a real problem. The mail plane comes from Moscow once a week. It comes to the rescue of some. But not of all, of course.

[Ladin] Which event from your as yet short stay in Tajikistan do you especially remember?

[Patrikeyev] The celebration of Victory Day in Dushanbe. There were a lot of people and there was a very strong feeling that the victory would unite people.

[Ladin] Incidentally, on the subject of celebrations, do people from the artistic world often visit Collective Peacekeeping Forces subunits?

[Patrikeyev] During my tenure there have not yet been any such meetings. I know that previously Iosif Kobzon and Semen Farada have been here. But on the whole the Collective Peacekeeping Forces troops and Russian border guards are not spoiled for attention. I would like to see artistic collectives in our parts more often. We will be only too pleased if they come. The troops are in great need of such support.

Conference Defends Peacekeeping Efforts

PM3006151194 Moscow ROSSIYSKIYE VESTI in Russian 30 Jun 94 p 3

[Article by Sergey Karkhanin under the "Hot Spots" rubric: "Rescue Mission or 'Imperial Thinking'? The Experts Offer Different Assessments of the Russian Troops' Peacemaking Operations"]

[Text] The house was on fire, the trapped owners shouted to their neighbor for help, and he doused the flames and saved them. But suddenly people turned up from another street and began criticizing the rescuer, asking him why he did not get his fire fighter's certificate and his official instructions before reaching for the hose and the fire hook. "But while you are worrying about my certificate, what happens if the house burns down?" the neighbor replied in amazement. "It doesn't matter, the most important thing is good order," the accusers said with a philosophical shrug. "And anyway, it is very suspicious. Why are you so quick to respond?"

Episodes from this seemingly implausible story were often used to illustrate the discussion by speakers in the conference on international cooperation and peacekeeping in the conflict regions of the CIS which ended in Moscow the other day. As has already been reported, the conference was organized by the Federation for Peace and Accord together with the Russian Committee for the Defense of Peace and a number of federal ministries, parliamentary committees, and scientific centers, and the guests included representatives of nearby countries, the NATO Secretariat and High Command, and experts from the United States, Britain, Sweden, Italy, and the Czech Republic.

There were three key questions in the debate. When it came to the assessment of the Russian peacemaking operations the experts split into two "camps": On the one side were the Russian researchers and their independent colleagues, while on the other there were the Western specialists. In addition there were disputes about the effectiveness of these operations, with some people doubting whether they could be called peacemaking at all. Meanwhile, beyond the terminological debate typical of academics there was on this occasion a purely practical problem: Does Russia have the right to engage in "fire-fighting operations" in the nearby countries even if the opposing sides themselves ask it do so, given that it does not have an international mandate?

Yes, we were forced to act as a fire-fighting team because neither the United Nations nor the CSCE was involved sufficiently or at all in combating the localized conflicts on CIS territory, Prof. Yuriy Fedorov of the Moscow State Institute of International Relations noted. Russia was the only force capable of restoring peace. Otherwise the house would have burned down.... Meanwhile the Russian Federation had repeatedly appealed to the United Nations to allow international organizations to help in peacemaking operations, or to take part itself, or to give us the corresponding mandate and financial support. But there had been no answer.

The criticism that Russia is violating UN legal norms is hardly tenable, because they were devised for extinguishing interstate armed conflicts even though eight out of every 10 conflicts in the world, religious and interethnic, take place within states. Incidentally, do not think that localized wars are a symbol of our life today that exists only in the former Union. As Academician Aleksey Podberezkin, president of the RAU-Corporation, recalled, back in the eighties U.S. analysts predicted that religious armed conflicts would soon erupt throughout the world because of an awareness of national interests which, whether right or wrong, is nevertheless gaining momentum. Iran and the Near East have shown that this is indeed a global tendency. It is no coincidence that the U.S. military doctrine envisages participation in several regional wars. In Europe, which still looks fairly stable, there are also national contradictions involving Romanians, Hungarians, Czechs, Slovaks, Poles, and Germans. Conflict is smoldering in Ulster, the Kurdish problem in Turkey has not been settled, and 500,000 people have already died in the African state of Rwanda. The former USSR is just one link in this chain of events providing evidence of urgent spiritual problems. Thus it is not ruled out that Europe and the United States will also soon have to face up to conflicts on their own territories.

Hence it is hard not to agree with the idea stressed by Russian experts at the conference that a universal "peacemaking concept" is scarcely possible. The difference between the events in Ulster and Abkhazia is too great. Be that as it may, Leonid Ivashov, secretary of the CIS Defense Ministers' Council, stressed, Russia bears a special responsibility for the development of the countries close to it because it united them for a long time, it initiated the disintegration of the USSR into sovereign states, and it declared itself the successor in law to the former Union. Even though it is inviting all the CIS countries to take part in peacemaking operations, this question is also due to be examined at a meeting of the CIS heads of state soon. "It is not a question of 'imperial' interests but of our legitimate interests, which are common to the majority of CIS countries," General Ivashov added. "Russia has neither the forces nor the potential for an imperial policy right now."

A dying people does not choose its savior, it calls for help and is grateful to anyone who responds. "When defenseless Tskhinval was being shelled night after night from the surrounding mountain tops by the Georgian extremists' artillery, we sent desperate telegrams to many foreign embassies and to the United Nations. However, only Russia spoke up in our defense: Two years ago, on its initiative, the Dagomys agreements were signed and a cease-fire became possible. Now the conflict zone is being monitored jointly by Russian, Ossetian, and Georgian

soldiers, and the experience of these tripartite peacemaking missions is unique." That comment was made at the conference by Lyudvig Chibirov, chairman of the South Ossetia Supreme Council, although Ellen Holoboff, director of the security studies program at King's College, London, and other Western experts stubbornly argued their case—that in its peacemaking operations Russia is guided solely by its own interests in helping regions with a "pro-communist" attitude....

You cannot measure everything by the same yardstick. That is why when summing up the discussion Vladimir Spandaryan, deputy director of the Russian Federation Foreign Ministry's CIS Department, felt it necessary to remind people that when Russia invites the United Nations to participate in peacemaking operations, what they say in New York is: Let the Russians provide the soldiers and meet the cost, but we will be in command. Such an approach is unacceptable to Russia: It is a great state. It has no need to justify itself. Tens of thousands of lives have been saved, and that is the main thing. However, the peacemaking mechanism needs improvement, of course, and the Moscow conference undoubtedly helped there.

Yuriy Lebedev, coordinator of the Federation for Peace and Accord's "Generals for Peace" group, now comments on the results of the conference at ROSSIYSKIYE VESTI's request.

There has already been bloodshed in the Caucasus and the south and there is cause for alarm in the eastern Baltic and northern Kazakhstan.... Consequently the peacemaking armory must include not only military but also economic and political measures and must be used preventively, not just when the house has already caught fire. Unfortunately, little was said about that at the conference, but what it did show was that Cold War inertia still makes Western analysts suspect Russia of "imperial thinking."

It is being said that we are using peacemaking as a pretext to introduce troops into the CIS countries so as to impose our policy on them. But surely we are obliged to douse flames that are burning on our borders, are we not? An international mandate is hardly necessary for that. That the Russian parliament should adopt a law on peacemaking is a different matter. In that case our officers and men who are trying to stop bloodshed would not be accused of "attempting to violate international standards."

Yes, there must be permanent political monitoring of peacemaking operations. It is no coincidence that many military people at our conference have been forced to speak as politicians....

It seems that not everyone in the West understands what is happening now on the territory of the former USSR since its disintegration. I think that our foreign colleagues could also take part in the peacemaking operations together with Russia's servicemen. Incidentally, Norway and Finland have experience of and special programs for training peacemaking forces, so why should we not study that? In addition, it is unfair that when acting in the interests of international stability the full burden of the costs of peacemaking should be borne by Russia alone.

They are demanding that we withdraw virtually all our troops from the nearby countries. But in those countries there are military installations which are extremely vital to the security of the Russian state and all the CIS countries. Removing the observation posts and radar stations would mean reducing the volume of information about a possible air or missile strike. That the troops need a legal status is a different matter.

I think that now, when the processes of integration are becoming increasingly perceptible, the problems of peacemaking should be discussed at the CIS Interparliamentary Assembly and backed up by laws and treaties. Creating a single defense area would strengthen the CIS. It would also be a good thing for the UN General Assembly to update some of the outmoded norms in the UN Charter. Political reality has proved to be more complex than those norms, and the blue berets have not achieved great successes either in Somalia or in Yugoslavia....

Preparations for Peace-Keeping Operations in Abkhazia

94UM0475B Moscow KRASNAYA ZVEZDA in Russian 17 Jun 94 p 1

[Article by Anatoliy Belousov, Vitaliy Denisov, and Sergey Propenko, KRASNAYA ZVEZDA correspondents: "Hope for Peace in Abkhazia Linked to the 'Blue Berets'"]

[Text] Preparations for introduction of peace-keeping forces into Abkhazia are in full swing. One can judge this according to the work schedule of Colonel-General Georgiy Kondratyev, deputy minister of defense, who is in charge of the operation. In Gali Rayon, he discussed complex questions with representatives of the local administration, then visited the border with Georgia, and met with representatives of the UN mission....

Soldiers of the 345th Airborne Regiment will probably be the first peace-keepers. The lads themselves understand that they will have to move up to the former front line. In particular, Junior Sergeant Anton Tarasov, Private Valeriy Korotayev, and Junior Sergeant Aleksey Kozlov, with whom one of us had the opportunity to meet in Gudauta, said that they are ready to help Abkhazia.

A meeting with an elderly woman in Gali was striking. All of her relatives had perished during the war. She literally worships Russian soldiers. In principle, this is the attitude of the local population toward the decision to introduce peace-keeping forces. Hope for peace is linked to it.

As was reported by the deputy commander of the GRVZ [Group of Russian Troops in Transcaucasus] for emergency situations, Major-General Aleksey Potapov, a combat engineer battalion is being transferred from Russia to the line of confrontation and has already begun mine clearing and preparing deployment sites for the peace-keeping battalions. In addition, a decision has been made on joint restoration by Russian and Georgian combat engineers of the main bridge across the Inguri River, which was blown up just less than a year ago during active combat operations.

Two motorized rifle battalions of the GRVZ are being relocated to the vicinity of the city of Zugdidi on 19 June. It is assumed that after the final decision is made by the Federation Council of the Russian parliament, they will advance to deployment lines specified for them. The number of CIS "blue berets" here will be brought to 2,500.

"With the introduction of the contingent of Russian peace-keeping forces into the zone of the Georgian-Abkhazian conflict, it is planned to do everything possible to safeguard the lives of Russian servicemen," said Colonel-General Vladimir Semenov, commander in chief of the Ground Forces, at a meeting with journalists. Nevertheless, he emphasized, the command of the peace-keeping forces does not rule out the possibility of provocations on the part of uncontrollable Georgian and Abkhazian rebel formations. According to the commander in chief, Russian servicemen have been authorized to use any measures in case of a direct threat to their lives.

Not everything is calm in Georgia. After the RF President's decision about Russia's participation in settling the Georgian-Abkhazian conflict, a faction of the Republican Party of Georgia in the republic's parliament disseminated a statement in which it maintains that the Gudauta battalion of Russian troops, which has been assigned to execute the peace-keeping operation along the Inguri River, has been totally won over by the Abkhazian side and more than once has taken part in the conflict on the side of the Abkhazian formations. The authors of the statement consider the stationing of this battalion on the Inguri River as establishing a border between Georgia and Abkhazia. The faction believes that Eduard Shevardnadze and his administration have undertaken a course aimed at removing Abkhazia from under the jurisdiction of Georgia.

Meanwhile, about 80,000 refugees from Abkhazia located in the city of Zugdidi and Zugdidi Rayon have expressed deep indignation over the actions by those members of parliament who are speaking out against a peaceful settlement of the Abkhazian conflict.

The head of the Georgian state, Eduard Shevardnadze, and the parliamentary majority have assumed responsibility for conducting the peace-keeping action by the CIS in the zone of the Georgian-Abkhazian conflict. This was announced after the emergency session of the parliament, at which the unified opposition spoke out categorically against introducing Russia's "blue berets" into the zone of the conflict.

"I do not want to be in the role of an advocate of Russia. We finally have found a common language with its leadership and have turned to face Russia. President Yeltsin himself stated that his country does not free itself of responsibility for what is happening. Therefore, we must not pose the question: Should we believe Russia or not? This is the shortest path to the return of the refugees and then also the jurisdiction to Abkhazia," stated Shevardnadze.

Success in the operation will depend largely on the time period of introducing the peace-keepers into the zone of the conflict. Any delay is fraught with unforeseeable consequences.

ARMED FORCES

Property Disposal Prices

94UM0480A Moscow KRASNAYA ZVEZDA in Russian 10 Jun 94 p 4

[Unattributed advertisement: "Russian Ministry of Defense Specialized State Cost-Accounting Enterprise"]

[Text] Offers equipment, property, military installations, individual buildings and structures being freed up in the Russian Armed Forces to organizations and private parties.

Address: 117342, Moscow, ul. Butlerova, d 40 Moscow telephones: (095) 334-98-44, 330-31-00 Fax: (095) 334-96-45.

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Vladivostok	(4232) 22-51-58
Yekaterinburg	(3432) 61-09-09
St. Petersburg	(812)314-94-14
Samara	(8462) 34-04-61
Murmansk	(81500) 3-19-97
Rostov-on-Don	(8632) 32-08-87
Novosibirsk	(3832) 20-76-78
Chita	(30222) 6-37-74
Kaliningrad (Oblast)	(0112) 45-64-73

List of Military Property For Sale: Status as of 5 June 1994

Commodity	Unit Price, rubles
Automotive Property	
URAL-375N truck, used	1,550,000
ZIL-131 chassis, used	1,246,000
ZIL-131 chassis, used	3,903,000
ZIL-157 chassis, used	665,000
6 ST-60 storage batteries	47,000
6 ST-75 storage batteries	57,000
6 ST-90 storage batteries	77,000
6 ST-182 storage batteries	150,000
Automotive spare parts	——

List of Military Property For Sale: (Continued)
Status as of 5 June 1994

Commodity	Unit Price, rubles
Clothing Property	
Trousers worn in boots	2,800
Camouflage trousers worn over high boots	3,200
Army felt boots, used	4,960
Army felt boots	8,000
Trouser top, black fur	1,500
Gabardine, aquamarine	3,600
Diagonal, Art. 15158, aquamarine	3,600
Wool beaver, Art. 3605	2,400
Single-breasted uniform jackets, gabardine, Art. 15157, camouflage	3,680
Single-breasted uniform jackets, semiwoolen, with turned-down collar and straight cut trousers	6,000
Single-breasted uniform jackets with high stand up collar and trousers, cotton, worn in boots	2,960
Single-breasted uniform jackets with turned-down collar, camouflage, for special contingent	7,200
Single-breasted uniform jackets, field, semiwoolen, without trousers, officer	2,880
Single-breasted uniform jackets, naval officer	3,680
Single-breasted uniform jackets, old model	2,800
Camouflage suit, white	1,280
OKZK [not further expanded] suit, cotton	6,640
Metal mess tins, used	280
Jackets and trousers, quilted, tanker	38,400
Jackets, camouflage	3,800
Pack suspenders, used	240
Tunics and trousers worn over high boots	9,600
Tunics, aquamarine, without trousers	3,200
Tunics, cadet	2,800
Tunics with straight cut trousers	4,800
Blankets, flannelette	7,400
Topcoats, officer and warrant officer	10,040
Topcoats with removable insulation, for special contingent	36,680
Campaign hats, cotton, enlisted	496
Garrison caps, wool, camouflage	808
OKZK garrison caps	500
Garrison caps, cotton, enlisted	400
Soft rubber	200
Belts, dress, silk, officer	4,400
Buttons, 22 mm, gold, without star	8
Buttons, 14 mm, gold, without star	6
Waist belts, enlisted, synthetic leather	420
Waist belts, web	208

List of Military Property For Sale: (Continued)
Status as of 5 June 1994

Commodity	Unit Price, rubles
Service shirts, officer, for tunics	1,040
Service shirts, enlisted, for tunics	1,200
Boots, Russian leather, sizes 38-40	16,660
Boots, felt, sizes 38-40	4,000
Boots, canvas-top, sizes 38-40	9,500
Cloth, steel color, Art. 3046	3,000
Cloth, steel color, Art. 4412	3,000
Fabric, Art. 2205, aquamarine	2,800
Peaked service caps, field, semiwoolen, old model	960
Peaked service caps, semidress	960
Peaked service caps, general, old model	1,040
Breeches, open quilted	12,000
Overcoats, cloth	11,600
Overcoats, enlisted, gray	8,000
Overcoats for enlisted men of authorized bands	8,400
Overcoats, cloth, Navy seaman's	8,800
Aviation Property	
MI-8 helicopter, used	54,626,000
MI-2 helicopter, used	19,360,000
MI-2 helicopter, used	27,016,000
MI-2 helicopter, used	21,340,000
L-29 aircraft, 1969-73, used	40,000,000
L-29 aircraft, 1969-73, used	58,500,000
K-36VM ejection seats (mockup), used	240,000
K-36DM ejection seats (mockup), used	240,000
Chemical Property	
VPKhR chemical reconnaissance instrument	7,700
GS-SOM carbon monoxide alarm	44,300
DK-2 decontamination set	54,000
DK-4D decontamination set	11,200
KZO-1 [warning sign] set	1,110
L-1 suit [light, protective, against bacteriological warfare agents]	14,300
KZS suit	6,600
Rubberized bags	2,500
Monoethanolamine (1 tonne)	61,000
BL-1M gloves	310
OP-1 protective poncho	8,750
DK-4-63 instrument (for gas-liquid processing, used)	18,720
PMG-2 protective masks	1,230
IP-4 self-contained breathing protective masks	9,100
IP-5 self-contained breathing protective masks	11,100

List of Military Property For Sale: (Continued)
Status as of 5 June 1994

Commodity	Unit Price, rubles
RP-4 regenerative canister	6,200
DP-5V roentgen meter	31,600
DP-22V roentgen meter	11,700
R-2 breathing masks	125
DP-64 fixed display-alarm	6,650
FVA-50/25 filter-ventilating unit	41,600
FVA-49 filter-ventilating unit	11,880
Overboots, protective	4,000
S-28.20 electric siren	700
Fuel Service Property and Equipment	
MNUG-20 pump unit, used	527,200
AKTs-4-255B tank truck, used	14,500,000
AKTs-4-255B tank truck, used	10,890,000
ATMZ-4 5-375 fuel tanker truck, used	5,530,000
ATs [remainder of designation illegible] tank truck, used	13,540,000
ATs [remainder of designation illegible] tank truck, used	4,030,000
ATs [remainder of designation illegible] tank truck [possibly used]	4,330,000
BS-200 barrels [one or two words illegible], used	8,200
KP-1 tank, used	13,700
MNUG-600 [one word illegible] station, used	341,500
R-8 storage tank, used	121,500
R-4 storage tank, used	151,800
Medical Property	
Oxygen cylinder, 2 liter, raz [not further expanded, possibly various] 355 GVMU [Main Military Medical Directorate]	11,700
Bandage, plaster, various sizes	——
DDA-66 [type of truck mounted disinfection shower bath] unit on GAZ-66 base	3,236,800
DDI-D2 unit on 1-AP-1.5 trailer base	673,200
Special protective suit with hood for sterilization orderlies	29,600
DDA-2 unit on ZIL-130 base	5,794,800
Medical preparations and veterinary property	——
Engineer Property	
MARM small sectional highway bridge, used	112,000,000
MARM small sectional highway bridge, used	144,000,000
Naval Property	
BMK-130 launch, used	1,600,000
Food Equipment	
SA-32 mobile mess on ZIL-131N chassis, used	4,745,000

List of Military Property For Sale: (Continued)
Status as of 5 June 1994

Commodity	Unit Price, rubles
ATsPT-5.0 water tanker on ZIL-130 chassis, used	27,011,000
AFKh-66 van-type bakery on GAZ-66 chassis, used	4,507,000
GZSA-950 isothermic van on GAZ-5 chassis, used	2,403,000
AKhB-2.5 automatic bakery on ZIL-137 chassis, used	23,871,000
PNK-2 portable hot-water heater, used	27,000
KP-125 trailer-mounted kitchen, used	733,000
KP-20 portable kitchen, used	327,000
KO-75 portable kitchen, used	368,000
OPK-150 portable kitchen, used	99,000
MVK-50 portable [50-liter military field] kitchen, used	29,000
KP-2-48,49 trailer-mounted kitchen [2-pot, model 1948, 1949], used	155,000
KP-130 trailer-mounted kitchen, used	1,160,000
PAK-200 [200-liter capacity] motorized field kitchen on ZIL-131 chassis, used	8,886,000
KA-125 motorized field kitchen on GAZ-66 chassis, used	6,390,000
PKS-2M mobile field kitchen and mess, used	5,986,000
PMKh [mechanized field bakery] section with two PM-50M2 ovens, used	23,409,000
KhPK-50M2 baking oven, used	4,218,000
PP-170 trailer-mounted stove, used	1,656,000
PFKh-1 van-type trailer-mounted bakery, used	473,000
TsV-1.4 trailer mounted water tank, used	1,666,000
K-1 trailer-mounted tank, used	204,000
TsV-50 trailer-mounted water tank, used	408,000
TsV-1.2 trailer-mounted water tank, used	498,000
TsV-4 water tank, used	68,000

Army Pay, Benefits Lag

PM2406094594 Moscow KRASNAYA ZVEZDA in Russian 22 Jun 94 pp 1, 3

[Article by Ivan Ivanyuk: "The Army Could Again Find Itself a Cinderella, or Why Must Some Lieutenant Colonel Get More Than a Commander in Chief?"]

[Text] There is probably no more pompous and more mocking expression in everyday Army life now than "servicemen's pay and allowances." For there is no getting away from the fact that the word "pay and allowances" [dovolstviye] is directly related to "satisfaction" [udovletvoreniye] and "pleasure" [udovolstviye]. According to Dal's dictionary, "dovolstvovat" means "to make content."

Now try to find in the Armed Forces someone who is content with the amount he is paid!

Prices are growing by 8-10 percent a month, while pay appears to have been frozen since January. There have been so many rumors and articles citing the most reliable sources, claiming that they were on the point of giving more money to budget-funded employees, that, if such a thing were to happen, nobody would believe it until they felt the bills in their own hands....

Information. The level of monthly pay and allowances in the Army and Navy now stands at:

—228,000 rubles [R] for tactical echelon officers (platoon-battalion commander);

—R325,000 for central apparatus officers;

—R144,000 for soldiers, seamen, sergeants, and petty officers serving under contract;

—R9,800 for servicemen drafted for military service.

This would not appear to be all that little, if you take as a reference point the level below which poverty lies and below which, according to official data, a considerable proportion of the country's population finds itself. But there really is nothing to envy. Figures are crafty things. They are one thing to statistics, which the market distorts far worse than the show of socialism did, but something quite different "in real life."

In real life an officer or ensign is required to work not a 40-hour week but, as a minimum, a 100-hour week with continuous 24-hour alert duties without days off or "passes" ["prokhodnyye"]. Many of them (135,000 as of January 1994) are fated not to have an apartment for their family and to pay R150,000-200,000 a month to sublease one. To have wives who cannot find work because there are no jobs in the garrison, and a mass of other problems known only to people in uniform. And, to cap it all, a categorical ban on engaging in any secondary activity which might go some way toward patching the holes in the family budget. These are inevitable if only because delays over paying out money in military units for a month or two are the rule rather than the exception. Therefore it is possible to give this brief answer to the question of how the Army lives: The Army lives in debt. The commissary long ago started using...debt books.

The Armed Forces are in a rather poor way socially, let us be frank, as a result of such a life. Recently the situation has deteriorated markedly. Given the fact that from January 1992 through June 1994 the base pay and allowances of servicemen were indexed eight times, on seven occasions this happened sufficiently swiftly to give rise to optimism in the Army milieu. But now there has been a long lull. Compared with last year, let us say, a more important criterion has also changed. Whereas only one year ago an officer could confidently say that in the social hierarchy he occupied a place in the middle of the "middle" class, now he can only dream about this and he is starting to lag behind many people in pay—which has never happened before. In Moscow, for example, where life is more expensive than anywhere else, a serviceman can envy representatives of all kinds of trades.

Information. According to the data of Moscow's State Committee for Statistics, the average monthly wage of working people in the capital's fuel industry stood at R374,200 in March of this year, and the figures for the electricity generating industry and the food industry were R332,000 and R298,400 respectively.

Under these conditions the prestige of military service is falling with literally every passing day. This is borne out by sensitive gages of various kinds—the creaking recruitment to military schools, the mass departure of contract servicemen and career officers, etc. Not that this prevents government officials from once again raising the question of abolishing servicemen's privileges. If the Ministry of Finance had willed it, it seems that all their privileges would have been abolished right down to 1918. They prefer not to recall the prerevolutionary level of assessment of military labor in Russia: Its "rating" was so high that for decades the new power was unable not to maintain at least an impression of it.

Information: A full general in the czarist Army at the beginning of the century received R775, and an Army lieutenant R70, while the average of a worker in 1912 was just over R20 a month. Taking into account the prices at that time (meat no more than 33 kopeks, butter 37 kopeks per kilogram), the purchasing power of an officer's salary has fallen by a factor of 2.5 to three times since then.

If you compare his position with that of servicemen in other armies of the world, the picture is still more depressing. The monthly pay and allowances of a lieutenant, a captain, and a lieutenant colonel in the Russian Federation Armed Forces in U.S. dollars stand at $93, $128, and $153 respectively and are at the level of military labor in Bangladesh ($85, $130, and $185). In the armies of Poland and Bulgaria, let us say, the level of servicemen's pay is 180 percent higher than in the Russian military, while in the United States, the FRG, France, and Britain it is 15 or more times higher. In all countries a military person gets appreciably more than other state employees—100-200 percent more in India, for example.

And yet the present critical nature of the situation does not even stem from these highly eloquent comparisons. It is a far more unpleasant and dangerous fact that the Russian Army has also ended up a Cinderella in the family of the so-called power ministries and structures where it is customary to wear shoulder boards. In the militia, for example, it is permitted, and the possibility exists, to pay extra out of local budgets. In the tax police a significant percentage of the funds collected goes into bonuses for officers—which doubles their salary. Incidentally, it is quite incomprehensible why some officials are fitted for a military uniform, which they do not wear all the same, when, if so desired, double the wages could have been established for them. According to this logic, military ranks could be conferred upon both miners and bankers—their labor, too, is very important. This is the second week that the army of newspaper observers has been trying to solve the president's riddle that our Armed Forces have 3 million men and must be urgently reduced.

But the Army and Navy have actually already been reduced to the actual level set for next year—1.5 million—owing to troop undermanning. But all kinds of departments, on the contrary, are building up the "military" stratum. Have they really already also built it up to 1.5 million?

At the same time, incidentally, they are securing for themselves salaries, increments, privileges, etc., nullifying all the efforts of the Russian Federation Defense Ministry Chief Military Budget and Finance Directorate for a sensible policy in the sphere of pay and allowances—to encourage "combat" work, service in "trouble spots," proficiency ratings, and support for young officers, those without apartments, and others in dire need. "Neighbors" play apparatus games, and the whole differentiation in pay is spanned because one's own department surges abruptly ahead in terms of the level of pay. This is done in circumvention of all sorts of interdepartmental commissions and Duma committees, which are called upon to coordinate these questions and to set the political tone in them.

How many times agreement has been reached before at a high level to implement one social policy in power structures, but again it has all come to nothing—the "convention" has once again been grossly violated. For example, a new monthly increment was recently introduced for servicemen in counterintelligence organs, the Border Troops, the Russian Federation Foreign Intelligence Service, the Federal Government Communications and Information Agency [FGCIA] under the Russian Federation president, the Main Protection Administration, and the Russian Federation president's Security Service, as well as for employees of internal affairs and tax police organs who already have the right to a pension but are continuing to serve. It ranges between 25 and 50 percent of the amount of the pension which could be fixed for them. The increment is clearly not for those who are "on patrol" but for officials. In addition, for example, the statute on the FGCIA, which was approved by the Russian Federation president's Edict No. 1085 of 27 May 1994, grants the FGCIA director the right to establish for servicemen of federal government communications and information organs an increment for the complexity and importance of the official duties being fulfilled and, accordingly, for high achievements in service ranging between 25 and 50 percent of the salary, to increase salaries for service in the FGCIA by up to 25 percent of the salary, to pay bonuses to servicemen and give them material assistance of up to five times the salaries, etc. Given such an apportionment, a FGCIA consultant, a lieutenant colonel, could make more than the commander of a branch of the Armed Forces. It is, of course, possible to acknowledge that this official is engaged on important work. But does this mean the commander is engaged on unimportant work?

When, at the suggestion of the Ministry of Defense, the talk once again turns to increasing the pay of servicemen, an argument is found which has long been held in reserve: There are a lot of you, and this adds up to large sums, but there is no money.

All this is fairytales. There is money. According to official statistical data published by ARGUMENTY I FAKTY for the first four months of this year, there are 1.127 million people in our country with a monthly per capita income of R50 million or more. We cannot vouch for the reliability of these data—few people now openly publicize all their income and outgoings. And yet. Collect, for example, R250,000 a month from each of them in the form of a tax—their families will not even notice a loss of 0.5 percent. This will be more than enough to double (!) pay and allowances in the Army and Navy. It will not even be necessary to trouble those with an average per capita monthly income of R2.5-3 million. There are 5.635 million such people in Russia. Not to mention the "middle" class...

One thing must be understood: Without a distribution of incomes that is in the slightest degree fair it is impossible to count on social stability in the country. Nor, equally, on this stability being ensured by the Army.

POLICY

Expanded Session of Academy of Missile, Artillery Sciences

94UM0475A Moscow KRASNAYA ZVEZDA in Russian 17 Jun 94 p 6

[Unattributed article: "To the Attention of Scientists, Designers, and Engineers"]

[Text] An expanded meeting of the Presidium of the Russian Academy of Missile and Artillery Sciences (RARAN), re-created by Edict of the Russian Federation [RF] President No 681 dated 6 April 1994, was held on 11 May 1994.

There was an exchange of opinions on the basic directions of RARAN activities for the immediate future to accomplish the tasks specified in the RF President's edict. The following people spoke at the Presidium on the questions being discussed: RARAN president V.P. Ikreyev; first vice presidents V.S. Solovyev and V.V. Panov; chief scientific secretary V.V. Selivanov; Presidium members A.A. Kokoshin, A.P. Sitnov, Yu.A. Glybin, Yu.N. Starodub, A.A. Kalpistov; and RARAN members invited to the Presidium N.M. Dimidyuk, B.I. Dukov, N.I. Karaulsa, and V.G. Mikheyev.

Leaders of the Ministry of Defense and the State Committee for the Defense Industry of the Russian Federation who attended the meeting supported the proposals on RARAN participation in developing and substantiating programs determining development of missile and artillery armament and development and introduction of dual technologies. It is also envisioned that RARAN will participate in conducting scientific examination of work being put forth and conducted under the academy's specialty for the purpose of efficient direction, use, and spending of funds.

By way of preparing for the RARAN general meeting, vacancies were examined and approved for holding elections to the academy, and candidacies for chairmen of the scientific departments and managers of regional and scientific centers were discussed. They examined in detail problems of financial support of RARAN work.

In connection with putting the finishing touches on the RARAN Charter in accordance with Edict of the RF President No 681 and with giving the academy state status, the founding organizations were identified as associate members of the RARAN, whose work within the framework of the academy is governed by a special statute. To resolve a number of scientific, organizations, and financial

[illegible] certificates to the associate RARAN members, and also questions associated with holding the RARAN general meeting, the Presidium made a decision on holding a preliminary meeting of associate academy [illegible] scientific research, experimental design, planning, educational, and other organizations [illegible] activities are associated with carrying out the main tasks of the RARAN.

A notice of elections to the RARAN, the text of which is [illegible], was adopted and approved at the Presidium.

Scientists, designers, process engineers, production [illegible] and operating staff, usually having a degree and [illegible] made a recognized personal contribution to the [illegible] of scientific and technical progress of missile and artillery armament of the Russian Federation, are [illegible] corresponding members of the RARAN.

Active members and corresponding members of the RARAN are elected by the general meeting of the academy.

Active members and corresponding members of the RARAN must actively contribute to developing scientific and technical support of the missile and artillery complex of the Russian Federation, increasing the prestige of the activities in the area of missile and artillery sciences, and [illegible] of scientists and designers working in different sectors of industry, enrich science and engineering-design practice with new achievements and discoveries [illegible], promote the introduction of achievements [illegible] and technology in modernizing the defense complex and the national economy of the Russian Federation, and conduct work to increase the qualification, training, and retraining of scientific and engineering personnel.

The right to nominate candidates for active and corresponding members of the RARAN is granted to academicians of the RARAN, scientific institutions, design organizations, civilian and military higher educational institutions, scientific and technical centers, industrial enterprises, and other organizations whose activities are associated with carrying out the basic tasks of the RARAN.

[illegible]

Documents [illegible]:

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. Photographs [illegible] (same type as foreign passport—[illegible])

The [illegible]

The materials are accepted by the RARAN Presidium from [illegible] September and from 12 to 15 September 1994 at the following address: [illegible] Moscow, Leningrad Highway, Building [illegible], RARAN.

Telephone for information: 263-83-36, 452-14-12, 459-97-64.

The RARAN, in accordance with paragraph [illegible] of its charter, hereby makes notification of existing vacancies for active members and corresponding members of the RARAN for the following departments:

Item No.	Department	Number of Vacancies	
		Active Members	Corresponding Members
[illegible]	Missile and artillery systems and complexes	[illegible]	[illegible]
[illegible]	Small arms	[illegible]	[illegible]
[illegible]	High-precision missile and artillery systems and complexes	[illegible]	1
4	Ammunition and engineer weapons	[illegible]	[illegible]
5	Gunpowder and explosives	[illegible]	[illegible]
[illegible]	Interior ballistics	[illegible]	[illegible]
[illegible]	Ballistics and flight path control	[illegible]	[illegible]
[illegible]	Dual-use equipment and technology; utilization of missile and artillery armament	[illegible]	[illegible]
[illegible]	Artillery reconnaissance assets	[illegible]	[illegible]
[illegible]	Automated missile and artillery armament control systems	[illegible]	[illegible]

Item No.	Department	Number of Vacancies	
		Active Members	Corresponding Members
11	Theory of gunnery and fire control of missile and artillery armament	-	3
12	Combat employment and effectiveness of missile and artillery armament	-	3
13	Testing and operation of missile and artillery armament	-	2
14	Scientific and methods support of training scientific and engineering personnel for missile and artillery armament	-	2
15	Problems of development of missile and artillery armament	1	
16	Special missile and artillery systems and technologies	-	3
17	Section of history of missile and artillery armament	1	2
	Total	1	40

Scientists, designers, process engineers, production workers, and operating staff are elected active RARAN members from among corresponding RARAN members who have a doctor of sciences degree and have made an outstanding contribution to the development of missile and artillery science, equipment, and technology.

STRATEGIC FORCES

Gareyev Interviewed on Nuclear Arms' Role, Purpose in Future War

PM2906120594 Moscow KRASNAYA ZVEZDA in Russian 29 Jun 94 p 3

[Unattributed interview with General of the Army Makhmut Gareyev under the "Russia's Interests" rubric; place and date not given: "Makhmut Gareyev: Nuclear Weapons in Today's World"—first two paragraphs are a boxed introduction]

[Text] General of the Army Makhmut Gareyev was born in Chelyabinsk in 1923. He has been in military service since 1941. He fought in the Great Patriotic War and was wounded and contused on several occasions. During the postwar years he progressed through all the basic stages of command and staff work. His last post in the Soviet Army was deputy chief of General Staff. He dealt with questions of scientific work and the operational training of the Armed Forces. In 1989-1990 he was adviser to the president of the Republic of Afghanistan. He is a doctor of military sciences, professor, and academician of the Russian Academy of Natural Sciences. He has written a series of books and 200 scientific articles.

M.A. Gareyev has just completed work on his latest book "The Shape of Future Wars" [Kontury Voyny Budushchego]. In it he expresses in particular certain unorthodox views regarding nuclear weapons and their position in ensuring Russia's military security. The editorial office asked M.A. Gareyev to share his thoughts in this regard.

[KRASNAYA ZVEZDA] World events and the persistent danger of military conflicts force us time and again to turn to the examination of trends in the development of military affairs and to ponder the position of means to wage armed struggle, and of nuclear weapons in particular. What, in your view, is the most substantial factor here?

[Gareyev] There are no doubts at all that, in our age, it would be foolish to associate rational policy with military strength. Unfortunately, however, irrational policy—which engenders phenomena associated with it—exists in parallel with rational policy in the world. For example, what would happen if war were forced upon some country or other and its independence were threatened? What means would it be able to use to wage armed struggle?

In this context we are immediately faced with the question of using nuclear weapons. Of course, we all have witnessed the qualitative changes now taking place in the policies of the world's leading states and in the means to wage armed struggle. On the one hand, the role and responsibility of politics are growing while, on the other hand, nuclear weapons are exerting a great reverse influence on politics, forcing a curtailment of political objectives. Having said all this, it must be borne in mind that political objectives in general ought to be attained primarily by peaceful means, without the use of military force.

[KRASNAYA ZVEZDA] But, at the same time, there is a widely held view in our country that external military threats in the world are diminishing. Nobody, so it is said, intends to attack Russia.

[Gareyev] When it is said that there are no military threats against Russia or any other state today, it should be borne in mind that this depends on the kind of policy being pursued. If some country or other finds it easy to forgo its national interests and submit to demands by other states, then there is indeed no need to use military force against it or attack it—the opposite side's political objectives can be attained without this. But if the country in question begins to firmly uphold its own interests, which may frequently clash with the interests of other states, then the emergence of real threats is possible. It is necessary to be prepared to counter them using both political and military means. Historical experience shows that the cost of defense is usually equivalent to the value a nation puts on its sovereignty.

[KRASNAYA ZVEZDA] The world is changing, but wars and military affairs have yet to recede into the past. In the light of this, what is the future of nuclear weapons?

[Gareyev] Following the emergence of nuclear weapons, the strategic planning and combat training of NATO and Warsaw Pact armies were restructured in line with the theory of nuclear war. Nevertheless, as thousands upon

thousands of nuclear warheads and delivery vehicles were stockpiled, it became increasingly evident (although not immediately realized by everyone) that a war involving the mass use of nuclear weapons would be impossible and, even if it were to be fought, there would be no victors in it. True enough, even to this day some military theoreticians are lamenting the fact that the art of warfare does not take sufficiently into account the impact of the use of nuclear weapons on the methods of armed struggle. But there is absolutely no sense in adapting the art of warfare to weapons which cannot be used.

There is no doubt at all that, from the viewpoint of mankind's overall interests, the most expedient step would be to eliminate these weapons and ban their use as was done, for example, with chemical weapons following World War I. But this lies in the distant future. Even if the agreements reached between the Russian Federation and the United States on the reduction of strategic arms were to be implemented, each side would retain between 3,000 and 3,500 nuclear warheads until well into the next century. This does not take into account the other powers' nuclear arsenals. Furthermore, nuclear weapons—despite their monstrous nature—are still the cheapest and most reliable means for deterring aggression. In today's conditions—when the balance of military strength has been severely disrupted in the wake of the bipolar world's collapse and the states which see themselves as victors of the "cold war" (let us not go into the question of whether this view is right or wrong) have gained tremendous military superiority—other countries, including Russia, cannot unilaterally renounce nuclear weapons.

But the realization of the impossibility to attain any political or military objectives using these weapons transforms them into a means of political deterrence of aggression and they cease to be battlefield weapons. Army General Pavel Grachev, Russian Federation minister of defense, emphasized at his meeting with NATO representatives in Brussels that "Russia perceives nuclear weapons not as a means of conducting combat operations but as a means of deterrence."

[KRASNAYA ZVEZDA] Yes, and this stems from the basic provisions of our military doctrine.

[Gareyev] Nonetheless, some military experts disagree with this approach. They believe that weapons whose use is ruled out cannot be a means of deterrence. They also speak about the inadmissibility of any "hesitation" ["razryv"] between the threat to use [nuclear weapons] and their actual use, and claim that it is impossible to "pit" the military-political aspect of nuclear intimidation [ustrasheniye] against its strategic aspect.

But nuclear weapons are nonconventional, and it is impossible to approach them using purely military yardsticks. First, the inevitable catastrophic consequences of the mass use of nuclear weapons deprive both sides of any chance to attain any political and military objectives whatsoever and render their use essentially pointless. The threat of reciprocal destruction deters both sides from taking suicidal steps although, of course, we cannot rule out instances involving the unauthorized use or utilization of nuclear systems for terrorist or other similar purposes.

Second, there are no contradictions at all as regards the approach toward nuclear weapons only as a means of deterrence rather than as a means of waging armed struggle. There is only a very complex and ambiguous dialectical link expressing the contemporary essence of the nuclear problem. In the same way as, for example, the refusal to be the first to launch war in light of the military doctrine's defensive nature does not deprive the state's military might of its deterrent role.

[KRASNAYA ZVEZDA] Is it therefore necessary to elaborate in depth a concept of nuclear deterrence?

[Gareyev] Of course. It is also perfectly obvious that any switch to a new concept of nuclear deterrence cannot be limited to just a political declaration. Its practical implementation would necessitate changes in the entire system of nuclear planning and the orientation of the Armed Forces' training. In my view, the main measures in this regard could be:

[Gareyev continues] —further limitation of the Russian Federation and U.S. strategic nuclear forces to the necessary minimum, involving the other nuclear powers in this process, and total elimination of tactical nuclear weapons, including aviation weapons.;

—official declarations by all—and I emphasize, all—nuclear states renouncing the strategy of nuclear war and the first use of nuclear strikes, and transition to a concept of nuclear deterrence envisaging only preparedness for retaliatory measures. This should be accompanied by planning the deterrent effect of nuclear weapons, reducing combat alert duty, mothballing some nuclear warheads, and introducing additional confidence-building and reciprocal monitoring measures at command posts and from space;

—stepped up and tougher international monitoring to prevent the further proliferation of nuclear weapons, the planning of their use, the ensuring of nuclear security, and organization of combat alert duty by strategic nuclear forces. For this purpose, a special organ could be created under the UN Security Council's Military Staff Committee, whose purpose would be to monitor the observance of norms and limitations on nuclear planning questions which have been set by international agreements. There is a special need to work out methods to swiftly block any attempts to use nuclear weapons for terrorist and other similar purposes;

—restructured training of armed forces by all states, and revision of the field manuals and training programs of troops and military education establishments so as to gear them not toward nuclear missile war but toward the performance of combat tasks using conventional weapons with simultaneous preparedness for defense against mass destruction weapons, while the men, equipment, and weapons of the strategic nuclear forces are geared toward service for the purpose of ensuring the deterrent effect of nuclear weapons.

[KRASNAYA ZVEZDA] You mentioned the need for all nuclear states to renounce the first use of nuclear weapons. What is your attitude toward the concept of their possible use in general?

[Gareyev] Looking only at the military-strategic aspect of the matter, the determination and readiness to be the first to use nuclear weapons in response to any aggression renders nuclear deterrence most effective both from the viewpoint of warning a potential aggressor and as regards the reliability of their use.

Nevertheless, from the political viewpoint and from the viewpoint of the interests of global strategic security, I think that it would be expedient to renounce the principle of first use of nuclear weapons in a future clarification of the Russian Federation's military doctrine. This would also be in Russia's interests. Why?

First, if there is a provision enabling the first use of nuclear weapons, their purpose goes beyond the framework of just a means of deterrence. Such a provision also runs contrary to the military doctrine's defensive nature because it is undoubtedly geared toward being the first to launch military operations. On the one hand, agreements on the retargeting of missiles are being concluded (between the Russian Federation, the United States, and Britain for example), intended to lower the threshold of a strike's element of surprise, while, on the other hand, the possibility of being the first to use nuclear weapons is recognized.

Second, as the international situation becomes more complex, the actual desire not to delay and be the first to successfully use nuclear weapons would prompt a dangerous rivalry—who would use them earlier, thus whipping up an already exacerbated situation and encouraging the delivery of a preemptive strike. In such conditions it would be difficult to even determine why nuclear weapons were used and who was the first to use them. This will create a breeding ground for sundry speculations and concealment of aggression. Preemptive actions could be taken and nuclear weapons could be used in "response to totally unproved aggressive intentions" by one state or another. The first use of nuclear weapons in the course of a war that has already been launched is a different matter, which needs separate examination. Furthermore, a provision enabling the first delivery of a nuclear strike will constantly encourage the creation [sozdaniye] of more effective strategic offensive forces and ABM defense systems.

From the military-strategic point of view, ensuring the guaranteed reliability of a retaliatory nuclear strike could be an alternative to a preemptive nuclear strike and one of the ways to enhance the effectiveness of nuclear deterrence. In the course of talks on strategic offensive forces, it would be necessary to try and ensure that neither side is deprived of the opportunity to deliver a retaliatory strike. For this purpose it would also be very important to strictly observe the limitations set on the deployment of ABM defense systems.

[Gareyev continues] Thus, nuclear war is outliving its usefulness and is becoming less and less probable. In essence, we are witnessing an antinuclear revolution in military affairs. But nuclear weapons will, for a long time to come, exert a decisive influence on the maintenance of strategic stability in the world, on political and strategic objectives, and on the course and outcome of conventional wars, even when such weapons are not used. To constantly bear this factor in mind would be in line with Russia's fundamental state interests and the tasks of ensuring its reliable security.

Nuclear Munitions Main Directorate Profiled

PM2806142594 Moscow Ostankino Television First Channel Network in Russian 0600 GMT 26 Jun 94

[From the "Behind Seven Seals" rubric of the "Test Range" program: Report over video from Russian Federation Ministry of Defense Nuclear Munitions Main Directorate; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [060350] [Unidentified correspondent over video of Arbat Square, part of footage attributed to VoyenTV (Russian Ministry of Defense TV Studio)] This is Moscow, Arbat Square. Behind the massive doors of this building is one of the most secret subdivisions of the Ministry of Defense. Many people would like to obtain information about this department. However, not even all the Ministry's employees can gain entry here. An exception was made for our camera team on condition that we will screen only what security organs permit to be screened. Even the text of this report had to be approved. The Main Directorate for Nuclear Munitions deals with highly specific and sensitive tasks. Its main task is to provide military units with the requisite number of nuclear munitions and to ensure their safekeeping in the arsenal.

Frankly speaking, a critical situation has taken shape. Large quantities of munitions have accumulated at arms dumps, yet the state has neither the money nor the production facilities needed to dismantle these munitions. The removal and dismantling of a single nuclear warhead costs, according to specialist estimates, $100,000. [video shows exterior, interior of building on Arbat Square; warhead being loaded onto a truck]

[Yevgeniy Maslin, head of Russian Federation Ministry of Defense (Nuclear Munitions) Main Directorate, identified by caption] At Ministry of Defense facilities there currently is a certain number of nuclear munitions whose guarantee period has expired. There is a simple explanation for this. The Russian Federation Ministry of Defense has of late taken over tactical munitions, munitions which had been located in CIS countries. Naturally, Ministry of Atomic Energy enterprises are unable to cope quickly with such a surge, with the task of recycling these munitions which has suddenly cropped up. Especially, since the munitions which are being withdrawn from Ukraine are being dismantled as a priority.

However, there is no need for any special concern about the storage of munitions with expired guarantee periods at Ministry of Defense facilities. There are special conditions for the survival of every category of munitions even beyond the guarantee period.

[Correspondent over video of military facilities in woods] Every possible provision has been taken at nuclear facilities to prevent technical means of intelligence, including space systems, from discovering the true size and potential of these facilities, and also to forestall their infiltration by

saboteurs and terrorist gangs. Modern electronic equipment makes it possible to monitor literally everything that is happening inside storage facilities and within a radius of hundreds upon hundreds of meters. A criterion of the security of these facilities is not just the permitted level of radiation, but more than a dozen of other safety parameters.

Nuclear warheads are transported in special vehicles. The vehicles are armor-plated and hermetically sealed. Should an emergency situation arise, such a vehicle can overturn, be engulfed by flames, or hit a mine without serious consequences.

Furthermore, all the country's nuclear munitions have several autonomous safety mechanisms protecting them against all kind of accidental encroachments.

All information about the movement of nuclear munitions and their storage and alert duty locations is processed at a computer center where it is possible to obtain all the necessary information about the presence and state of nuclear munitions at any given location.

[Maslin] There is a whole system of organizational and technical measures which makes provision for the punctual implementation of all the requirements contained in the design documentation. All the operations concerning nuclear munitions are carried out by three people as follows—one person reads the instructions, the second person carries them out, and the third person checks that all the operations have been carried out correctly. This means that everything that the designers and developers have prescribed is being meticulously carried out.

The next requirement is to ensure that equipment used to monitor or maintain nuclear munitions is functional at all times. There are specific procedures to ensure this. Periodic tests of this equipment are carried out.

[Correspondent over video of servicemen handling munitions] Only servicemen who have passed their training with grades no lower than "Good" are allowed to test and service nuclear munitions. And that despite the fact that the "well-being"—if you permit the expression—of each munition is monitored by special measuring equipment which immediately prints out the relevant information. The analysis of these checks shows that Russian warheads present no threat to us. (O60920) [video shows interior, exterior of Main Nuclear Munitions Directorate which controls the disposition and safe storage of nuclear munitions; interview with Col.Gen. Ye. Maslin, chief of the Main Directorate; military facility in woods; computer room; maintenance work in progress on nuclear munitions]

Design, Handling of Nuclear Weapons 'Suitcase'

944D0052A Moscow MOSKOVSKIYE NOVOSTI in Russian No 23, 5-12 Jun 94 p B12

[Interview with Major-General Viktor Ivanovich Boldyrev, by Vladimir Umnov: "The Man with the Suitcase"]

[Text] *Day and night, with no days off or holidays, the "keepers of the nuclear suitcase" follow the "number one" like a shadow. Who are these people? Up to now, they were not even mentioned in the press.*

Nikolay Devyanin, chief designer of the first modification of the Soviet nuclear "suitcase" (see MOSKOVSKIYE NOVOSTI, No 13), introduces the person we are to interview:

[Devyanin] The name of Major-General Viktor Boldyrev was "exposed" only once: in the book "The Kremlin Conspiracy" [Kremlevskiy zagovor] by Lisov and Sepankov, his witness testimony on the "Foros case" was loosely interpreted. For more the 10 years Viktor Ivanovich headed the group of "operators"—the people accompanying the "number ones" and carrying the nuclear suitcase.

They had to master the first modification—not the 10-kg one which the whole world wrote about, but one weighing about 36 pounds. And it was not in a "Samsonite" case; the first suitcase was homemade, thick, with two lids and four bolt locks, and opened both from the bottom and from the top.

During this time, four general secretaries were replaced, but Boldyrev remained permanent. Last year, Viktor Ivanovich went into the reserve due to his years of service.

Where Does Who Come From?

[Boldyrev] On the last day of the Soviet Union, in December 1991, the two operators on duty and I were summoned to Gorbachev. Mikhail Sergeyevich said: "Thank you. I have no complaints about your service."

We went to see Yeltsin at the White House. The question arose: Should the team be changed? I then said: "This subunit does not serve either Gorbachev or Yeltsin. It is intended to ensure the "leadership" the possibility of using strategic nuclear forces in an emergency situation." They agreed with me.

[Umnov] Ten years before this, in the early 1980's, when the "Kazbek" automated system of command and control of the strategic nuclear forces was just being developed, you had to create the service of operators from scratch—no one knew that this would be for a vocation. Where did you come from?

[Boldyrev] From the Main Directorate of the General Staff.

[Umnov] What did they call your new position?

[Boldyrev] Sector chief.

[Umnov] What rank were you?

[Boldyrev] Lieutenant colonel.

[Umnov] And you began to recruit majors?

[Boldyrev] I worked alone for about a month and a half, and with a collective of designers and operating staff I studied and tested the system until the question was resolved: Who will "carry the suitcases?" At the General Staff they were of the opinion that these should be officers with a wide range of interests who know the entire chain of command not through hearsay.

Initially, I recommended to the leadership seven officers from 50 candidates. "According to what principle did you select them?" Colonel-General Ivan Georgiyevich Nikolayev asked me. "As I understand it, they, first of all, must be honest people, efficient, responsible, and conscientious."

The first candidate comes to see Nikolayev: "Can you tell me what Dostoyevskiy wrote besides The Idiot?..." Silence. "Can you briefly tell me about yesterday's Vremya program?... Okay, you can go..."

Later he said to me: "Well, where is his wide range of interests? There is nothing to talk about with him." After this, I had to increase the requirements for the candidates.

Nikolayev turned out to be right. One time Minister of Defense Yazov, being in a museum with a guard and our officer-operator, said: "I think this is an early Kustodiyev. What do you think?" he turned to the guard. The guard replied: "My duties are physical security!" "Georgiy, what do you think?" "You are exactly right that it is a Kustodiyev, but not an early one, comrade marshal!" They approach closer: "Georgiy, you are right."

[Umnov] Other demands were probably also placed on the operators: to be not an ugly person, but also not very handsome either.

[Boldyrev] Ordinary, without any pronounced physical marks. Later we also took men with moustaches.

[Umnov] There were no men with beards?

[Boldyrev] Beards were not in style. We took those who were outwardly ordinary so as not to stand out, but who were excellent fellows.

That is how we recruited the first bunch of operators. Not just those who knew about Kustodiyev and Dostoyevskiy, but who were, above all, conscientious, professionally prepared, had experience of alert duty on complex equipment, and were familiar with electronics.

By the way, at first this came in handy. Can you imagine what it is like to carry around 16 kg day and night? In developing the first modification, the designers presented it this way: the operator places the suitcase on the table, locks it, and sits on the couch to read MOSKOVSKIYE NOVOSTI. Suddenly, there is a signal—the suitcase has begun to chirp. The operator gets the key from his pocket, opens the suitcase, and looks: oh, brother, that is when the situation changed! He goes into the adjacent office and reports...

It won't do! Start the stopwatch, here the operator went and came, and how much time passed? "Only five minutes!" "Not only, but a WHOLE five minutes!"

The designers considered the remarks and made today's suitcase: light, connects to a fixed network, and self-contained. And the minutes were turned into seconds.

Lessons for the President

[Umnov] You assembled quite a small team to service three users—the president, minister of defense, and chief of the General Staff. Is it easier to maintain relations in such a collective?

[Boldyrev] Certainly. You don't hide behind a comrade's back, even if there is a desire.

[Umnov] Who became the first user of the nuclear suitcase?

[Boldyrev] Operational testing, still without alert duty, began in 1983 with Ustinov and Chief of the General Staff Ogarkov. The group of the "first" at that time trained for Brezhnev and then Andropov, but never began work.

The first general secretary whom we began accompanying and servicing was Chernenko, and it was under him that we instituted alert status of the system. Full operation began under Gorbachev.

[Umnov] Did the leaders express any desires as to what kind of people they wanted as operators?

[Boldyrev] No. Apparently, they trusted military people.

[Umnov] Did you give lessons to the users?

[Boldyrev] Periodic classes are not envisioned; it all depends on the user. The technical possibility is there: situations can be played out—this is instructive and impresses them.

[Umnov] Did you conduct exercises for yourselves?

[Boldyrev] Absolutely. We communicate with command and control facilities and periodically exchange information with them. Most of the time the equipment is, as we say, in a "sleeping state." But this means that the equipment is "sleeping:" information is coming in constantly.

Suitcase Humdrum Existence

[Umnov] Certainly, the operators have many temptations: to look around, ask something—they may forget about duty...

[Boldyrev] There indeed are many temptations. But during my entire time of service, not a single officer has brought a single reprimand from a shift from a user.

[Umnov] Were there instructions to stay away from the television cameras and reporters' cameras?

[Boldyrev] From the very beginning we agreed: try not to be in the front rows.

[Umnov] What kind of clothing?

[Boldyrev] As the situation warrants. Why go fishing in a suit if it is more comfortable to wear jeans...

[Umnov] When accompanying the "number one," do the operators work in the "protected zone?"

[Boldyrev] Absolutely. Security knows them by sight and will help them not to fall behind, especially on trips and in meeting the people on the street. The "number one" gets in the car and it takes off immediately. And the operator must be able to get into his. Physical training helps.

[Umnov] Do the operators have physical training lessons?

[Boldyrev] Of course. We once entered a volleyball team for championship of the Main Directorate and beat everyone.

[Umnov] The operator is all the time next to the "number one," almost like a family member. Surely there were instructions about how far away to be.

[Boldyrev] The operator must be in the immediate proximity, enabling him to perform his functional duties.

[Umnov] What if he wants to be alone? The operator must go right after him, and inevitably not the most friendly attitude toward him arises.

[Boldyrev] Absolutely. And many, especially at the beginning, often reacted in that very way. But immediate security is next to them nonetheless...

[Umnov] What about at home?

[Boldyrev] When they arrived home, the "number one" went to his office, and the operators went to a separate office next to it. They walk far enough away so as not to hear what the people are talking about.

Each knows the layout of the room thoroughly. There is a direct link everywhere. "President" is written on the telephone in the operators' room.

[Umnov] Is life in general distressing?

[Boldyrev] Difficult and tense. I am simplifying it specially for you. But the people wear out terribly. There were times when they came off duty, took validol, or went to the dispensary.

[Umnov] Certainly, operators had "compensation" for this?

[Boldyrev] We had no special buffets or cut-rate coupons.

[Umnov] Gorbachev traveled all over the world. You did, too, I suppose?

[Boldyrev] No, we had restrictions. When Mikhail Sergeyevich went abroad, the minister of defense assumed his duties.

[Umnov] What about now?

[Boldyrev] Now, they go.

[Umnov] Did any of the officers complain about getting this duty?

[Boldyrev] Not that I heard. I said to them: "You probably have friends who are big commanders and generals. Do you regret the missed opportunities?" "No. I have been entrusted with something not entrusted to everyone."

I always spoke out against demonstration of obsequiousness, and this is not part of our duties. I was always against excessive contact with the entourage, for this could interfere later...

Foros

[Umnov] You have never had any emergency situations during your life?

[Boldyrev] God has been merciful. However, there was Foros.

[Umnov] After Foros, you were "exposed" to the entire world: Major-General Viktor Ivanovich Boldyrev took away his people. There was no command and control of strategic forces, and Boldyrev sits in the General Staff and does not care a rap, the carefree general... Why did you order your people to leave the president?

[Boldyrev] I was ordered to bring the shift to Moscow; the duty shift received no other instructions, including from the president.

I am confident that no one during the putsch had set as their task to eliminate the capability of command and control of the strategic forces. It was something else, a political game, and at the same time the communications on which the "Kazbek" system was based were disconnected. Finally, the "Kazbek" system is designed only for command and control of nuclear weapons in an emergency situation...

If communications in Foros would have been working and someone would have suggested to me: "Boldyrev, remove your people," of course, I would not have done this. But communications were disconnected, and without them it made no sense to keep both the "suitcase" and the people there.

[Umnov] How was an operator to behave if he received an order from you and simultaneously from the boss of the suitcase? Which would he carry out?

[Boldyrev] When it goes on duty, the shift is subordinate only to the user of the suitcase.

But you must not forget: Whoever has communications—be it the command and control of the strategic forces or a home telephone—that is who rules the dance. We thought about this with the developers: Should we create a system for the president that is closed and not under the control of anyone else? Of course, we can, but this takes money and a political decision.

[Umnov] You were discharged from the armed forces for years of service?

[Boldyrev] Yes, I was already 58, and they are discharging generals of my category at age 55.

[Umnov] Has such work affected your personal life?

[Boldyrev] I was glad to go to work and glad to go home. I knew that I could be called at any moment, which is why I always had to remember this... I lived 20 minutes from work.

[Umnov] By chance?

[Boldyrev] No, they gave me an apartment there. My car has a radio; several times on Tverskoy I turned on the siren and turned around. The GAI [State Motor Vehicle Inspectorate] inspectors rushed to stop me, but when they found out later what was going on, they helped...

All holiday morning postings—I was at work, be it 1 January, 1 May, or 23 February...

[Umnov] It seems like you had to go to work everyday?

[Boldyrev] I did not go on my days off—I had an excellent deputy.

[Umnov] Did you and your fellows had security on the way home and on the way to work? After all, you know so much...

[Boldyrev] How can you say that! You can catch one out of every three colonels of the General Staff and one out of every three knows something that might interest many people very much.

New Weapons Control Official Interviewed on Warhead Removal

94UM0445B Kiev NARODNA ARMIYA in Ukrainian 28 May 94 p 2

[Interview with Center for Administrative Management of Strategic Nuclear Forces of the Ministry of Defense of Ukraine Chief Colonel Oleksandr Serdyuk by NARODNA ARMIYA commentator Senior Lieutenant Serhiy Zhurets under the rubric: "First Interview in the New Post": "The Warheads Will Be Removed From Ukraine Over Three Years.—*The Rest of the Problems of Nuclear Disarmament Will Be Gotten Rid of as Quickly as Possible*"]

[Text] **Background information on the interviewee:** *The military path of Colonel Oleksandr Serdyuk began from the Suvorov School, then on to the Kharkov Command-Engineering School and officer service. He served first in the Kartalinskyy Division, in an OS missile regiment, and then went to the Academy imeni Dzerzhinskyy. After graduation he was assigned to the Plesetsk test range.*

Colonel Oleksandr Serdyuk returned to serve in Ukraine in 1992. He was deputy chief of the directorate for missile and space weaponry, and then was named by order of the Minister of Defense to the position of chief of the Center for Administrative Management of Strategic Nuclear Forces of the Ministry of Defense [MO] of Ukraine.

[S. Zhurets] A Ukrainian delegation headed by Vice Prime Minister Valeriy Shmarov recently returned from the United States. There they discussed, among other things, the question of deactivating the missile systems stationed in Ukraine. How do you, directly heading up the structure of the MO that is performing this crucial and difficult work, regard the status and prospects for the nuclear disarmament of our nation?

[O. Serdyuk] The fulfillment of deactivation is naturally an additional demand on the officers of the 43rd Army and the officers of our Center, insofar as the task of removing the missile systems from combat duty and performing the tasks of deactivating them are being added to the everyday tasks of maintaining the missile and special equipment in proper condition. These tasks are work of enhanced security in and of themselves, and their performance requires quite a bit of human and material resources.

The principal burden of performing this work lies on the officers of the 43rd Missile Army, with considerable organizational activity performed by the specialists of our center as well.

[S. Zhurets] And Ukraine will be able to fulfill unconditionally the obligations it has assumed at the international level, for the deactivation of the 46 SS-24 missiles, within the ten-month time period stipulated in the trilateral statement of the presidents?

[O. Serdyuk] There are no grounds today to say that we will not be able to perform those tasks. The removal of the combat systems from duty is proceeding according to plan, and we are fulfilling the schedule that was approved by the government, as well as the schedule that was stipulated in addition to the trilateral statement of the presidents. We have already performed more than half of the deactivation work.

[S. Zhurets] The separation of the warheads from the strategic missiles is perhaps the simplest of what awaits the servicemen of the 43rd Army, with the more difficult problems—in particular the subsequent destruction of the launch stages and the missile silos, and the ecological support for that process—still ahead. That work, as is well known, envisages a comprehensive program of gradual cutbacks and the elimination of land- and air-launched nuclear weapons. How is the fulfillment of that program proceeding?

[O. Serdyuk] We are doing work in the preparatory stages of fulfilling this comprehensive program that was approved by the government. Ukraine, in accordance with the decree of the Supreme Soviet ratifying the START-1 Treaty, is to eliminate 36 percent of the launch stages and launchers. Disarmament, as we see, is thus a very prolonged process, which must be provided with financial resources first and foremost. We have gotten into a paradoxical situation today—it is much cheaper to maintain the missile systems, to keep them in a proper state, than today, under conditions of harsh economic crisis, when we have to strain to remove those systems from duty. That process is not an advantageous one for us economically. The amount of money that we need for that has already been noted in the press. Without sufficient financing we could get into a situation where we will be forced, whether we want to or not, to lengthen the time period or halt the work. I have in mind here not the deactivation, but the work on the elimination itself. And it would be a shame, of course, if the funds that are allocated for the elimination measures (talking here about the trillion karbovantsi allocated by the budget of Ukraine for 1994 for elimination measures) were received very irregularly. As of today, with a whole quarter virtually gone by, we have received only approximately 27 billion karbovantsi of that required. That is far too little. The more so as the comprehensive program is not only, and not so much, the elimination measures alone. It is also the resolution of the social problems of servicemen in the strategic forces, which we have always put in first place. The discussion here concerns the building of housing for officers, the creation of jobs, medical support for the servicemen who take part in the elimination measures and deactivation work.

The officers of the strategic forces are laboring under highly strained conditions today. They have to perform three tasks simultaneously—be on combat alert duty and maintain combat readiness, remove the RS-18 missiles from service, and carry out the deactivation process. These are one and the same crews, one and the same people. And they, in performing their crucial work to destroy one of the largest strategic arsenals in the world, have to be certain of their future, of their social protections.

That is why under today's conditions, with inadequate financing, it would be expedient to adopt a model of the elimination process whereby that elimination is carried out in stages. After all of the work has been performed on one missile system—that is, it has been removed from

duty, broken down and the equipment dismantled, social problems have been resolved and work has been completed on recultivation of the terrain—only then should the elimination of the next ballistic-missile system begin. And not the way it could occur—all of the missiles taken away, the silos closed up in accordance with the START-1 procedure, the holes left and the social problems of the servicemen unresolved.

[S. Zhurets] What assistance can we expect from the United States—so much talked about, especially lately—under these conditions?

[O. Serdyuk] Comparative indicators of our expenditures on the path of nuclear disarmament with the actual payments to this process on the part of the United States is far from to the advantage of the latter. As of May, we have received just 2,000 tonnes of fuel, three truck cranes and six specialized vehicles out of the promised American aid, defined as 185 million dollars.

The principal shortcoming of the American aid is moreover not so much the amount of it, as the very narrow area for its utilization. This was caused by the restrictions of Nunn-Lugar, which does not permit that aid to be directed to the resolution of such topical problems of the Armed Forces as social protections for servicemen who will be discharged from the Army owing to the elimination of the nuclear weapons. There will be, after all, no "real" money, we will receive only the material and technical means for the elimination work in the indicated amount.

It must be pointed out that the assistance of the United States should be considered not an act of charity, but rather as natural compensation for the military and economic losses of Ukraine connected with their nuclear weapons.

[S. Zhurets] One could perhaps recall here that one of the recent consultations pertaining to the distribution of the additional financial assistance of the Americans insisted that 50 million dollars be directed, first and foremost, to dismantling the 46 SS-24 missiles.

[O. Serdyuk] Yes, that was the approach. The Americans have a vested interest in that elimination, and that is naturally why they pose such questions. We have, in my view, so many problems with regard to the elimination of those missiles whose guarantee periods have expired, the RS-18s, that to say that we should begin the elimination of the SS-24s would be absurd. Ukraine has not assumed any international obligations whatsoever on that score.

[S. Zhurets] We are to salvage more than a third of the launch stages. A considerable portion of them were manufactured in Russia. Wouldn't it be more advantageous to resolve the problem with the salvaging of those missiles at Russian plants, rather than invest funds in the expansion of a salvage base in Dnipropetrovsk that will scarcely be needed after that work?

[O. Serdyuk] The decision has already been made pertaining to the the building of a yard and neutralization station at the Pivdenne KB [Design Bureau]. That work has already started. That is first, second, the Russian Federation has actually offered to take those missiles for salvage. Those proposals, however, were far from being free. Taking into account the fact that the construction of the neutralization station is being done at the expense of the American funds, that approach would obviously be expedient.

[S. Zhurets] How do matters stand with fuel storage?

[O. Serdyuk] The construction of storage facilities for the missile-fuel components is being done today at the expense of that trillion for elimination, which is being allocated in very erratic fashion. Quite a bit of effort will have to be applied here to fulfill that task.

More than half of the heptyl could be used for the needs of the national space program. The guaranteed storage time of heptyl (close to fifteen years) would make it possible to count on such an option.

[S. Zhurets] Since you have already brought up the prospects, one fundamental issue concerns the future of the infrastructure of the 43rd Missile Army. It would be regrettable, after all, if those multi-billion facilities were to be reduced to nothing.

[O. Serdyuk] The infrastructure of the missile systems stationed on the territory of Ukraine could doubtless be preserved and used again, with the corresponding government decision and with the corresponding capital investment. It could be preserved and used or wasted irreversibly, since after the elimination of the missile launch silos in Ukraine, the aura that is created by the status of a nuclear-missile state would essentially be destroyed as well.

This decision is doubtless exceptionally important for the future of Ukraine. A considered approach, in my opinion, has been demonstrated by our parliament in designating a quota for the elimination of launch stages and missile silos—36 percent. The rest of the potential could and should be used for the accomplishment of tasks connected with ensuring the country's security. If all of this is destroyed, then we cannot expect that Ukraine will be able to restore that infrastructure some other time.

[S. Zhurets] Thank you for the interview, and I hope that NARODNA ARMIYA, with your assistance, will return again to the complex and exceptionally important topic for Ukraine of nuclear disarmament.

As the material was being prepared for press, it became known that an agreement has been signed between the governments of Ukraine and the Russian Federation on the fulfillment of the trilateral declaration of the presidents in Moscow. That document stipulates deadlines for the removal of nuclear weapons from the territory of Ukraine—no later than 1997—and the obligation of Russia to send fuel for nuclear-power plants to Ukraine and account for the value of the tactical weapons that were removed from our territory, to be counted toward our debt to Russia for power carriers.

Chelyabinsk-70 Scientists Appeal for Help

944D0070A Moscow NEZAVISIMAYA GAZETA in Russian 28 Jun 94 p 6

[Article by Yuriy Bersenev, chairman of Special Design Enterprise 24 of the Russian Federal Nuclear Center—the All-Russia Applied Physics Scientific Research Institute: "The Country's Nuclear Weapons Complex Is in Pitiful Condition: the Equipment Is Aging Physically and the People Are Working at the Limit of What Is Feasible"]

[Text] We, the workers of the Russian Federal Nuclear Center—the All-Russia Applied Physics Scientific Research Institute (RFYaTs-VNIITF [RFNC-ARAPSRI]), are profoundly disturbed by the situation which has arisen in the nuclear weapons complex. Recognizing all the complexity of the economic situation in Russia, we are compelled, nevertheless, to draw attention to the intolerability of the on-going process of the actual destruction of this unique facility which is our enterprise.

The RFNC-ARAPSRI, one of two Russian federal nuclear centers, was organized in the city of Chelyabinsk-70 (now a closed administrative-territorial formation, the city of Snezhinsk, Chelyabinsk Oblast) in 1955. The past decades of peace and creativity in the life of our state have shown that the activities of the nuclear weapons facilities, including the RFNC-ARAPSRI, for the development of adequate nuclear weapons systems are the most efficient means for deterring any agression. More than 50 percent of the nuclear weapons systems currently in our armament include nuclear devices developed at the RFNC-ARAPSRI.

In recent years, the state organs' attitude toward the military-industrial complex as a whole and toward the two federal nuclear centers included has changed substantially. Presently, the funding of the RFNC-ARAPSRI is at such a low level that the threat of the cessation of work on state defense orders is becoming a reality, not to mention the development of the conversion directions. At the same time, the functioning of three similar centers in the USA is proceeding at the former level and they are recognized as the country's national property.

The constant inadequate and tardy funding has brought the RFNC-ARAPSRI to a critical point. The enterprise's debts come to tens of billions of rubles and they are growing as well due to the forced expenditures to pay off fines and credits.

The equipment is aging physically, there is a catastrophic shortage of materials, instruments and special work clothing and the energy resource suppliers have repeatedly threatened to cut off the gas and electricity. As a consequence, the risk of emergency situations arising is increasing, including even in the technologically dangerous sections of production.

The systematic delays in the payment of wages to the workers over the course of the last 2 and ½ years are creating a very complicated and physically and morally difficult social situation in the labor collective. The people simply have nothing on which to live and nothing with which to feed their families. They have to work under especially harmful and dangerous conditions in such a mental state that it may lead to grave consequences.

An extremely complicated situation is also occurring in the social sphere. Medicine is leading a pitiful existence, the birth rate has declined and the level of the rates of illness and mortality has increased. There are no funds for improving the health of the workers and their children. In fact, the construction of housing has stopped, the number of needy has increased and there are families with three children living in dormitory facilities. The subsidiary agricultural enterprise has been forced to cut back the cattle and poultry population, it cannot supply the workers with products and, in essence, it is collapsing.

Disturbed by the processes occurring and the threat of the loss of the attained technical and scientific potential, which would be impossible to restore, the leadership and the trade union committee of the RFNC-ARAPSRI have repeatedly turned to the various state organs with a request that the matters of the enterprise's financial and economic position be examined. There is a draft of a governmental decree on the funding of the federal nuclear centers, which has been discussed repeatedly in the Minfin [Ministry of Finance], Minekonomiki [Ministry of Economics] and Mintruda [Ministry of Labor]. But the majority of the labor collective's appeals have gone unanswered and the decree draft is still just a draft.

We are turning once again to all state administrative organs and to President Boris Yeltsin personally with a request that our problems be examined and the appropriate decisions be made immediately and, first and foremost, on the matters of:

the approval of the RF Government's decree on the funding of the federal nuclear centers;

the paying off of the debts and the payment of the delayed wages;

and the allocation of the necessary funds for housing construction, medicine and other social-sphere directions.

We are certain that Russia needs our labor and we are ready to devote our knowledge, forces and experience to the independence and might of our Motherland. We are relying on the wisdom and foresight of Russia's president, government and other administrative organs.

AIR FORCES

Survey of Russian Guided Air-to-Air Missiles

94UM0369C Warsaw NOWA TECHNIKA WOJSKOWA in Polish Nos 2-3, Feb-Mar 94 pp 31-35

[Article by Piotr Butowski]

[Text]

At the end of the nineteen fifties Artyom Mikoyan's and Mikhail Gurevich's team have all by themselves built the long-range (so rated at that time) K-9 missile, also called the K-155. Its prototype was displayed publicly in 1991 under an E-152A plane, but the missile was not certified as a combat weapon. In the West it was called AA-4 Awl.

The K-15 missile (Object 275 and 275A) with homing by a radar beam was developed by Semion Lavochnik's team

for their "250" long-range interceptor fighter aircraft (the system being called La-250K-15). Work on the "275" was not completed, just as was not the work on the successor "277" missile with a semiactive radar self-homing system. In the second half of the nineteen fifties S. Lavochnik was extraordinarily busy, but construction of the La-250K-15 system was not on top of his list of projects. Priority had been assigned to his two other missiles: V-350 Burya [Storm] strategic wing missile and V-300 antiaircraft missile for Moscow's defense system. After Lavochnik had died in 1960 his team disbanded and was only in 1965 reestablished, but for entirely different purpose: distant-outer-space research.

The heretofore unknown guided air-to-air missile was built by Pavel Sukhoy's team. This one, called the R-38, was intended for their T-37 interceptor fighter aircraft. Its aerodynamic design was a classical one, similar to that of the R-4 (K-80).

Several years later the situation stabilized and of at least six teams engaging in air-to-air missile development only two teams of specialists remained "on the battlefield": Matus Bisnovat's team and Ivan Toropov's team. Work on only two of the aforementioned first-generation missiles was continued, on the K-5 (already out of the hands of D. Tomaszewich's team) and M. Bisnovat's K-8. The improved version K-8M was in 1961 certified as a combat weapon (designated by ordnance as the R-8M; such a dualism applies to all Soviet air-to-air missiles, the letter K referring to Engineering Office and the letter R referring to Air Force) [translator's note: letter R is the English equivalent of the Russian letter P]. This missile worked together with the Oriol [Eagle] radar set.

Subsequent modifications of the K-8 missile have lead to the K-8M (R-8M1, more widely known as the K-98 or R-98). It was equipped with a semiactive radar homing head, which enabled it to attack airborne targets not only from behind but also, for the first time in the USSR, head on. The first interceptor-fighter system including an R-98 missile was the Su-15-98 aircraft, this missile also being used on Yak-28P aircraft together with the Oriol-D radar set and later on Su-15TM aircraft with the Tajfun[Typhoon]-M radar set.

In 1973 production of the R-98 missile was changed to production of its last modification R-98M (K-8M), one with greater firing capabilities and a higher interference immunity. All these missiles were produced in two variants, with radar guidance (suffix R) and an infrared guidance (suffix T) respectively. Their training version was the UR-8M, constructed in 1966. In the West all missiles of the K-8 family are called AA-3 Anab. The R-98M missile is still a part of the combat equipment carried by the Su-15TM aircraft.

In 1959 M. Bisnovat's team began working on the K-80 missile (Object 36), later called the R-4. It was intended specially for the Tu-128S-4 interception system consisting of a Tu-128 long-range interceptor fighter aircraft, a Smerch [Tornado] on-board radar set (that is what the letter S stands for), and R-4 missiles (that is what digit 4 stands for). Two versions of the R-4 missile were developed: the R-4R using a semiactive radar set with a PARG-10-88 homing head and the R-4T using an infrared apparatus with a T-80NM head. Besides the Tu-128, only Mikoyan's E-152M experimental aircraft carried R-4 missiles.

The R-4 missile was series-produced since 1963 but with many reservations (just as concerning the Smerch radar set). In 1973, therefore, was begun production of its improved K-80M (R-4TM and R-4RM variants) for the Tu-128S-4M system (Tu-128M aircraft, Smerch-M radar set, and R-4M missile). In the West the K-80 missile and its modifications are called AA-5 Ash. Several years ago the R-4 missile was ultimately withdrawn from ordnance along with last Tu-128 aircraft units.

A breakthrough event affecting development of Soviet air-to-air missiles took place on 24 September 1958, when the Chinese acquired an American AIM-9B Sidewinder missile. Fired from a Taiwanese F-86 Sabre aircraft, it got stuck without exploding in the hull of a MiG-17 aircraft which belonged to the People's Republic of China. The missile was sent to Toropov's engineering office to be copied. The outcome was the K-13, for a long time the most popular Soviet air-to-air missile.

The Sidewinder had many features very valuable to the Russians. First of all, they learned here about the modular structure so much more easily handled in production and in operation. They were stunned by the simplicity of the AIM-9, considering that the first Soviet missiles in this class were very complex. Its steering and in-flight stabilization system was excellent. The infrared-guided self-homing head contained a free-running gyroscope and was much smaller than the Soviet counterparts.

It was Gennadiy Sokolovskiy, now chief engineer at the Vympel [Pennant] team, who said that most importantly, "the Sidewinder missile was to us a university offering a course in missile construction technology which has upgraded our engineering education and updated our approach to production of future missiles." On the basis of this experience, "it was possible to resolve such problems as after several years deciding whether or not to also copy the AIM-7 Sparrow missile and to decide against it, because our designs were considered to be technically superior to the AIM-9 Sparrow design."

In 1960 was began series-production of the K-13 missile (also called R-3 or Object 310, AA-2 Atoll in the NATO code). In 1962 came into existence the R-3S (K13A or Object 310), the first version used in large numbers. Its homing operation took much more time (22 s instead of 11 s). The Russians quickly stepped ahead of the original Sidewinder model, making in it a dozen or more modifications. In 1961 came into existence the high-altitude K-13R (R-3R or Object 320) with a semiactive radar head, recommended for combat aircraft in 1966. Its training versions were the R-3U missiles ("uchebnaya" [instructional], barrel with a homing set, not fired from an aircraft) and the R-3P ("prakticheskaya" [for practice] differing from the combat version only by absence of an explosive charge). As a flying target for them served the RM-3V (RM denoting "raketa-mishen" [rocket-target in Russian]

In January 1960 it was decided to use the homing head of the K-13 missile in K-5 and K-8 missiles as well, and to thus devise a missile for tactical air combat. In 1962 M. Bisnovat's OKB-4 Special Engineering Office was testing K-88 missiles, smaller than the K-8 and with a K-13 head. The K-88 was relegated to the prototype status.

As a weapon was instead certified the R-55 (K-55, Object 67), a modification of the K-5 missile. The R-55 was series-produced throughout the 1967-77 period and quite widely used on planes of those years. Because at that time the Almaz [Diamond] team had already not any more been working on air-to-air missiles, the task of developing the K-55 missile was assigned to the engineering office which had been set up at the Kaliningrad (Moscow Oblast) Series Production Plant then under the direction of Ye. Korolev. This plant was producing aircraft weapons (artillery turrets for M-4 bomber aircraft, sights, etc.), then in 1955 began series production of the first K-5 and K-8 guided air-to-air missiles. Developing the K-55 missile was the first task ever assigned to this team alone (and the only one concerning air-to-air missiles in the history of this team). Now this engineering office in Kaliningrad, under the name Zvezda [Star], is the leading Russian creator of strategic guided air-to-ground missiles.

During the 1966-68 period the names of armament makers in the USSR were changed. Among others, also the two teams working on air-to-air missiles were renamed. Since then M. Bisnovat's OKB-4 team is called Molniya [Lightning] and Andrey Lyapin's (who replaced Ivan Toropov in 1961) team is called Vympel [Pennant]. These two teams were working primarily but not only on guided air-to-air missiles. The Molniya team also developed, among others, the Ch-29 strategic air-to-ground missile and both teams have already built units for the antiaircraft missile systems.

The 3M9 antiaircraft missile for the Kub [Cube] set broke the career of Ivan Ivanovich Toporov, founder of the OKB-134 Special Engineering Office. The missile was designed on the basis of precepts which had not been experimentally verified so that it became necessary not only to build such a missile but also at the same time to conduct pertinent basic research. During their first launch tests, which were begun in 1961, the 3M9 missiles disintegrated in the air. The consequent avalanche of aerodynamic, engine, and steering problems compelled Toporov to ask the Ministry of Armaments to extend the deadline for submitting the 3M9 to governmental tests. Toporov, not having an easy to deal with character and using rough language in his talks with the minister, was at the end of August 1961 removed from his post of chief engineer and replaced by Andrey Lyapinov as director of the team. This did not accelerate the work on the 3M9, but finally in 1966 the missile together with all the Kub equipment was certified as a weapon and then turned out to be one of the most successful Russian antiaircraft missiles. In the meantime Ivan Toporov, after leaving the OKB-134 Special Engineering Office, became department chairman at the Moscow Institute of Aviation.

During the second half of the nineteen sixties the Vympel team began working on the K-13M (R-13M, Object 380) modification of the K-13 missile, which was subsequently in 1973 certified as a weapon. It has a cooled homing head, a radio rather than optical closing-in igniter, and a more potent warhead. Analogous modifications of the R-55 resulted in the R-55M missile. The last version of the K-13 is the R-13M1 with a different shape of the steering apparatus. The K-13 missile was produced in China as the PL-2 (updated versions PL-3 and PL-5) and also in Romania as the A-91.

Since the beginning of 1962 M. Bisnovat's team was working on the new long- range R-40 (K-40) missile commissioned specially for the MiG-25-40 high- altitude interception system (MiG-25 aircraft with Smerch-A radar set and R-40 missiles). Although the R-40 is merely insignificantly larger than its R-4 predecessor, its range is almost three times wider. This missile was produced in two variants: R-40R (Object RD46 with PARG-12 head) and R-40T (Object TG-46).

After the high-jacking of a MiG-25P to Japan on 6 September 1976, a thorough redesign of that aircraft was undertaken in the USSR and the MiG-25PD came into existence as a result. First of all was replaced the interception system, then also the radar set and the missiles. On the aircraft was installed not a Smerch-A but a Sapfir[Sapphire]-25 radar. The new missile R-40D and its R-40D1 update ("dorabotanaya" [more elaborate]) produced in two variants R-40RD and R-40TD, both featuring a higher interference immunity and a more sensitive homing head so that they can better cope with flying targets covered from the ground. The R-40D1 missile was developed by the Vympel team, the Molniya team having at that time been assigned to a different task so that it had to gradually withdraw from development of aircraft missiles. In the West the R-40 is called AA-6 Acrid. In the USSR it is still included among the weapons of MiG-25 and MiG-31 aircraft. Its production was discontinued in 1991. In the middle nineteen sixties was begun work on the next (third) generation of fighter jet aircraft, which resulted in the MiG-23. It was specially for this aircraft specially that the Vympel team developed the K-23 intermediate-range missile. Although the first units of the K-23 missile were tested simultaneously with the first prototypes of the MiG-23 aircraft, this missile was only later in 1973 certified as a weapon: for the MiG-23M aircraft.

Like all the other missiles, the R-23 comes in two variants: R-23R (Object 340) with radar guidance and R-23T (Object 360) with infrared guidance. There is also the training version R-23UT. The R-23 is used on earlier versions of the MiG-23 plane. The later MiG-23ML and MiG-23MLD versions of this aircraft carry the R-24 missile, a modification of the R-23 with improved characteristic and most importantly a wider 50 km rather than 35 km range. In its external appearance this missile is very similar to its predecessor. For actual use it is available in two variants: R-24R (Object 140) and R-24T (Object 160). In the West both the R-23 and the R-24 go under the same name AA-7 Apex. The R-23 is produced in Romania, under license, as the A-911.

In 1968 an American AIM-7M Sparrow landed in the USSR, this missile being similar to the R-23 class of missiles just then being tested. The Vympel team was assigned the task of copying the Sparrow under the name K-25. Several copies of this missile were then launched on a trial basis, but ultimately the Soviet's own R-23 missile

was sent to production. Work on the K-25 was completed in 1971. Gennadiy Sokolovskiy's expressed his view in saying that "our R-23 and then R-24 missiles were superior to the K-25 in not only versatility and range but also interference immunity, signal processing logic, and other characteristics." Nevertheless, some conclusions drawn from analysis of the Sparrow missile design were helpful in later work on the the R-27 missile: on its hydraulically driven closed-loop servomechanisms and aerodynamic system with movable wings.

During the initial period air-to-air missiles in the USSR were developed for combat against bomber aircraft and reconnaissance aircraft, which has led to the concept of an "interception system" combining the aircraft with its homing-toward-target apparatus, its on-board radar set, and its missile. Only toward the end of the nineteen sixties did M. Bisnovat's Molniya team begin working on the first missile for tactical air combat, the K-60 (R-60, Object 62), with infrared self-guidance. Series production of this missile was begun in 1973, this R-60 missile then being certified as a weapon for all types of Soviet combat aircraft.

The R-60 missile may not be regarded as the immediate successor to the K-13. It is an unusually small missile, weighing half as much as the lightest Western missiles. In conformance with its size, also its combat payload is small (the warhead weighs barely 3.5 kg). The R-60 on shock aircraft (MiG27, Su-24, Su-25) thus plays rather the role of a self-defense missile and on fighter aircraft (MiG-23, MiG-25, Su-15) it is occasionally used as a supplementary one called "pocket" missile.

A unique feature in the history of the R-60 missile is its unusually short development time. Hardly four years passed from the beginning of its design to the beginning of its production, while the development process of Soviet air-to-air missiles takes typically 8-9 years. Such a fast development was made possible by the availability of a wealth of experimental data on the K-13 missile. No new research was done for the R-60 missile, whatever was available just having been put together.

A further development of the R-60 are the R-60M missile and its export variant R-60MK. Its training version is the UZR-60. In the West the R-60 missile and its modifications are called AA-8 Aphid.

Conclusion of this article will appear in the next issue.

GROUND TROOPS

Features of IRM Engineer Reconnaisance Vehicle

94UM0476A Moscow KRASNAYA ZVEZDA in Russian 17 Jun 94 p 2

[Article by Col Viktor Moroz, KRASNAYA ZVEZDA: "General-Purpose Engineer Reconnaissance Vehicle"]

[Text] Not everyone can guess the purpose of this vehicle by its outward appearance. Since there are none like it, there also are no visual associations. The vehicle's external hanging equipment is impressive by its diversity. It also has complex equipment in its inner sections and compartments. The combat specialty of this armored all-terrain vehicle is revealed by its name: IRM—engineer reconnaissance vehicle. Its mission is engineer reconnaissance of the terrain, movement routes, and water obstacles.

A periscope, artificial horizon, navigation equipment, and three various vision devices help the crew conduct visual reconnaissance and quickly determine their position on the terrain.

The IRM is able to conduct comprehensive reconnaissance of water obstacles. Thanks to two propellers on the stern, it easily maneuvers on water. An engineer reconnaissance echo sounder makes it possible to determine the depth from 0.5 to 20 meters with great accuracy, record the profile of the bottom, and detect obstacles in the water. The echo sounder consists of an automatic recorder and three acoustic converters: two of them on the bottom of the vehicle and one on the wave guard. The echo sounder is also able to estimate the relative density of the bottom.

The RShM-2 wide-swath river mine detector, with which the vehicle is equipped, makes it possible to detect mines at a depth of up to 0.3 meters, if the mine body or fuze elements are made of ferro-magnetic alloys.

When leaving the vehicle, the crew uses portable instruments: mine detectors, an engineer reconnaissance periscope, rangefinder, transit, an ice auger with measuring rule, and so forth. The crew has at its disposal two R-147 radios.

Basic Specifications and Performance Characteristics of IRM

All-up weight, t	17.2
Maximum speed, km/hr	
highway	52
afloat	12
Engine horsepower, hp	300
Range (fuel), km	500
Armament	7.62-mm PKT machinegun
Communications range, km	20
Crew size	6

Crew activity is supported by an air purifier, a fire-prevention system, a water-removal device, a system for protection against weapons of mass destruction, and thermal smoke-generating equipment.

The IRM is noted for a high degree of self-sufficiency. It is equipped with an extensive set of spare parts and tools. The vehicle's emergency self-recovery equipment is interesting in its own way—solid-fuel rocket motors. With a small weight (6.3 kg), they have a high tractive effort.

In the process of operating the IRM, experience has been gained that is necessary for further development of engineering reconnaissance equipment.

NAVY

International Cooperation on Komsomolets Radiation Hazards

944D0057B Moscow MORSKOY SBORNIK in Russian No 4, Apr 94 (signed to press 19 Apr 94) pp 52-53

[Article by Admiral (Reserve) V. Samoylov: "Echo of the Komsomolets Tragedy: Reflections in Connection with the Fifth Anniversary of the Ship's Loss"]

[Text] Five years have gone by since the marine depths swallowed up the newest and world's deepest-running submarine Komsomolets and 42 of her crew members perished, but to this day many of the mass media devote their publications to this tragedy. Both the Navy and the country's military-industrial complex often remain objects of harsh criticism. At the same time, practically no one recalls either the catastrophic consequences of the collision of the motorship Admiral Nakhimov, which took around 500 human lives, or the fate of the transport Kapitan Tarasov with her entire crew, or certain other similar incidents at sea which occurred in recent years.

Many of the Navy's critics name the negative influence of the painful state of our society and imperfection of state mechanisms of the former USSR on development and organization of the fleet as the principal reason for its existing shortcomings, including a high accident rate. It is hard to agree with this, however, for both earlier, back in the Russian Imperial Navy, and in the present Navy of democratic America, in England's Royal Navy, and in the navies of other countries, disasters and accidents have happened and do happen rather frequently. This means it is not a matter of the social or state system, but something else. In my view, the reasons for this lie above all in the specific conditions of man's practical activity at sea and in the lack of society's concern about full-fledged support to such activity. Therefore, there probably has been enough heaping of all misfortunes on the previous regime, although this is a convenient form of oversimplified approach to realities of our maritime life. It is time to delve deeper into our Navy's problems and take a more considered approach to their solution.

When two U.S. nuclear submarines (Thresher and Scorpion) were lost with all crew members (around 300 overall) in the 1960's, these events also shook American society, but such frenzied criticism and attempts to find culprits were not observed there as they were here; considered searches were made for methods and ways of preventing such a thing in the future, and they were immediately implemented. Against this background, the saddest thing in events which followed the loss of Komsomolets is that there is controversy to this day as to who is more guilty. The Russian Main Military Procuracy reopened a criminal case on this incident. While emphasis was placed more on technical aspects in the first "round" of the examination, now it was the people, and above all the surviving crew members, who ended up "under the gun." But will there be a benefit from this?

I am not for being all-forgiving; it is simply that everything must be done promptly and this process must not be allowed to be conjunctural in nature. In my view, the important thing is a prompt reaction to what happened, and not just with repressive measures, but with correct, far-reaching conclusions and vigorous implementation of technical and organizational measures worked out on their basis, helping to reduce the risk of submarine as well as any other kind of navigation.

And how are things today, five years later, with the accident rate? In his article Navy Chief Navigator Rear Admiral V. Aleksin[1] cites specific and seemingly optimistic data on this matter. But CinC Navy Admiral F. Gromov states that "the accident rate of Navy ships and vessels still remains high. . . . Sixty percent are technical accidents. . . . and there has been no decrease in accidents connected with shiphandling."[2] I believe there also has been no noticeable improvement in this matter in other departments which have seagoing vessels. And the CinC Navy evidently is not worried for nothing, for funds being allocated for 1994 are at the very least five times less than required and in no way ensure maintaining the fleet in normal technical condition. And this means one should expect new misfortunes...

Well, but what about Komsomolets herself? The readers know that over the past five years there already have been four expeditions to the site where she sank. Over 10 vessels with a large number of scientists and specialists took part in them, using the most modern equipment beginning with various measuring instruments and ending with manned and unmanned deep submergence vehicles. For the first time in world practice, large-scale studies have been made both of the submarine herself at a great depth as well as of her environment, which permitted keeping the situation on this ship monitored and preparing promptly for the conduct of new scientifically grounded measures. At the present time they are being worked out for the next 2-3 years.

True, a number of scientists and specialists both in our country as well as abroad assume that this is superfluous and nothing has to be undertaken with respect to the given nuclear powered submarine [SSN], since nothing terrible will happen even if corrosion products of weapon-grade plutonium should escape into the environment from nuclear warheads aboard her in subsequent years. They refer to studies the Americans made at their own sunken nuclear weapons. But we are fully confident that in all cases it is necessary to keep monitoring the radiation and ecologic situation in the vicinity of this submarine's loss, just as it is to take possible preventive measures reducing the scale and consequences of such an outcome. In our view, this is specifically that instance where it is best to "go too far."

In a conversation with me once, an American colleague declared that they were following our work in the vicinity of Komsomolets with uneasiness, since this creates a precedent whose consequences could be public demands on the U.S. Congress to carry out similar measures in areas where their SSN's are on the bottom. Perhaps it is to divert the attention of countrymen from this problem that someone in the United States today is pressing the situation over another one of our SSN's, which sank in 1986 in the vicinity of the Bermuda Islands and whose "remains" rest at a depth of around 4,000 m?

Well, probably the need has matured to conduct scientific research in that region as well, but then it also has matured

even more for studying areas where U.S. SSN's sank and where their other nuclear weapons rest on the bottom. But such a position finds no support on their part for now.

An international symposium was held in St. Petersburg at the Rubin Central Design Bureau of Naval Equipment in the period from 31 January through 2 February 1994 to discuss results of 1993 expeditions to SSN Komsomolets and to work out a joint concept for further research. Scientists of Russia, the United States, Norway and the Netherlands as well as representatives of international organizations—the Komsomolets Foundation, Nansen Ecologic Center and Greenpeace—took part in the discussion. There was an open, frank exchange of research data and results and of other information and opinions at the symposium.

The statement by symposium participants noted that the radiation situation in the area where SSN Komsomolets is located is normal on the whole as of August 1993 and does not differ from the natural radiation background. Results of measurements and analyses of samples performed by scientists of Russia, Norway and the Netherlands independently of each other essentially coincide, are in good agreement, and are mutually supplementing. The leak of radioactivity from the nuclear reactor of SSN Komsomolets is extremely slight and presents no ecologic danger.

Questions of the condition of nuclear weapons in her torpedo tubes also were touched on widely at the conference for the first time. No escape of corrosion products of plutonium from the tubes into the environment was registered in 1993, which indirectly indicates that the nuclear weapon cases still retain mechanical integrity. But after they have been in sea water for a certain amount of time and after corrosion failure of the case localizing the plutonium, the possibility of it escaping and spreading in the surrounding medium is not precluded. Therefore there must be a more detailed study of the dynamics of corrosion failure of the designs of nuclear weapons and nuclear reactors in sea water, and also of the escape of radioactive products contained in them and their spread in the surrounding medium, with development of a forecast of ecologic and other possible consequences of the presence of nuclear materials on the seabed.

As a result of the 1989, 1991, 1992 and 1993 expeditions, a large amount of data also was obtained on natural conditions at the SSN Komsomolets location, needed for a more reliable radiation and ecologic forecast of the situation's development in this area. But according to the conclusion of symposium participants, there are requirements for even longer observations of oceanologic parameters, suspension transportation processes, sedimentation, the Norwegian Sea ecosystem and data on the area's geodynamics. The great interest in these processes is caused by the fact that no one ever studied them even in an approximate form as applied to radiation sources which have ended up on the seabed. This also is very important from the standpoint of improving safety in handling nuclear weapons.

In the course of the symposium there was a discussion of proposals on the extent of necessary work in this area for the next two years, developed by scientists of a large number of institutes under the direction of Academician I. Spasskiy, general designer and chief of the Rubin Central Design Bureau of Naval Equipment. The meaning of these proposals reduces to decreasing significantly the water exchange between nuclear weapons and outside water in order to reduce the likelihood of plutonium escaping all at once, which found support among the majority of symposium participants.

The final document also notes that the experience of work and international cooperation to study the situation of SSN Komsomolets merits support and can be recommended in studying other radioactive objects on the bottom of seas and oceans.

Footnotes

1. See MORSKOY SBORNIK, No 3, 1994.
2. See MORSKAYA GAZETA, Nos 3-4, 1994.

Submarine Designer's Book on Komsomolets Sinking Viewed

944D0057A Moscow MORSKOY SBORNIK in Russian No 4, Apr 94 (signed to press 19 Apr 94) pp 46-51

[Article by Captain 1st Rank V. Krapivin, candidate of technical sciences: "Tragedy of a Ship and Honor of a Crew"]

[Text] *Five years have gone by since that tragic day of 7 April 1989, when the nuclear powered submarine Komsomolets sank in the Norwegian Sea as a result of an accident. The loss of the ship with part of the crew evoked a previously unprecedented public echo. Articles on the disaster occupied a prominent place in the pages of newspapers and journals. This topic proved to be in keeping with the general mood for criticism of the Armed Forces on the threshold of their reform. Therefore many biased articles unfortunately also appeared, above all concerning an assessment of actions by ship personnel.*

Two opposite positions formed here. One was based on an understanding of the tragedy of the situation in which the submariners found themselves, but at first its proponents experienced difficulties in their arguments because of an initial lack of official information. The other side took advantage of individual fragments of the accident to accuse the crew of poor training, considering this the fault of the naval leadership (and criticism was directed essentially against the latter). With that statement of the question the crew became "small change" to please personal ambitions of the most active critics of the Navy.

Meanwhile, there was intensive work by the government commission for revealing the circumstances and causes of the ship's loss. Its most important goals were to determine not only the causes of the disaster, but also specific steps to improve submarine survivability. Nevertheless, despite the great volume of data obtained and although the official finding was complete, it was very laconic.[1] This did not satisfy some representatives of the second side, and they cast doubt on results of work which had been done, demanding that "independent" experts be involved in it. It proved impossible for both positions to come together based on a considered dialogue over the circumstances of the submarine's loss. After examining the complaints being put forth, the USSR Supreme Soviet Working Commission on Defense announced on 16

January 1991 that it "considers the conclusions of the Government Commission for Investigating Causes and Circumstances of the Loss of the Submarine Komsomolets to merit trust and sees no grounds to cast doubt on results of its work." The discussion on this topic thereby seemingly was ended.

But this did not prove to be the case. One proof of this and the reason for writing this article, in which probably also not everything is without question, was the publication on the fourth anniversary of the ship's loss of the book "Tragediya podvodnoy lodki Komsomolets" [Tragedy of the Submarine Komsomolets] by D. A. Romanov, deputy chief designer of this submarine's design project, who believes that the "opinion of shipbuilding industry workers on causes of the tragedy just was not communicated to people."

Above all, Romanov's book generated in me the impression of a document laying claim to fulfilling a task which had been assigned to an entire government commission. On the whole, it is of unquestionable interest as a professional submarine designer's vision of the technical aspects of realization of domestic shipbuilding achievements in her, and also views on the causes and nature of the accident's progression. On the whole, the book merits attention, but the author's assessment of the personnel's actions in my view not only is biased, but even directly bears the nature of slander. It is on this component of the book that I deem it my duty to dwell in more detail.

The very beginning of the book, creating a mood for interpreting its subsequent content, abounds in coarse expressions and even accusations such as "deliberate disinformation . . . and lies," "juggling with facts," "a criminal order," "lack of conscience and official duty" and so on. And to whom they are addressed is precisely indicated: "Woe to submarine flotilla specialists," "to the highest Navy ranks," "to the submarine's criminal leadership," "to the Navy Institute," and "to the Navy Main Directorate for Maintenance and Repair"... In addition to this, expressions also are encountered such as it "tarred someone else and considers its work done," "based on rumors and talks with familiar yardmen," "they swung this . . . like a Neanderthal swings a club" and so on.

In addition, the book gives an enormous number of quotes from documents which even specialists know only in general outlines. Therefore it remains for the majority of readers only to accept them on faith, although everyone knows that often only those expressions which fit within an author's scheme are used for persuasiveness of the conclusion being offered and, taken out of context, can "confirm" whatever you like. As a result Romanov insistently leads us to a conclusion shocking in its peremptoriness, that "total inaction of personnel in ship damage control . . . and poor professional training of the Komsomolets crew are the sole cause of the tragedy." But you see, there are facts, evidence, circumstances and explanations about which the deputy chief designer is silent. And this forces turning anew to the dramatic events of that day, not at all to "tar someone else," but to restore the truth and learn necessary lessons.

Komsomolets was at a depth of 386 m when a fire broke out in seventh compartment at 1103 hours (DL)[2]. To this day it is impossible to name the causes and source of the ignition unequivocally. The compartment high-pressure air supply valve was in the center or immediate proximity of the fire. The valve control mechanism's polyamide seal burned out and as a result it opened and air entered the compartment. Due to the swift pressure increase and continuous inflow of air, exceptionally favorable conditions were created for rapidly turning the aft compartment into a furnace.

Nevertheless, taking advantage of way (before the turbine's emergency protection system was tripped) and then blowing the main ballast tanks with air, the crew managed to get the submarine up to a surface condition. It would seem that everything that was most difficult was behind them, but the main ordeals still lay ahead...

It is common knowledge that sealing a stricken space is the very first means of fighting the spread of fire, but on this ship design project, sixth and seventh compartments remain in communication with each other via individual oil system lines with the nuclear power plant operating. Oil began to be forced from seventh compartment tanks into sixth by pressure of the gaseous and air medium. According to the report from deceased Warrant Officer V. Kolotilin, there was an "ejection of hydraulics from under the turbogenerator." (This was oil.) Oil spray can ignite when it comes in contact with a red hot metal surface, which probably happened. Thus the two aft compartments rather swiftly turned into a red hot furnace, where, according to estimated calculations, temperature in seventh compartment could reach 800-1000°C with a recorded pressure of around 13 kg/cm^2. Suff ce it to say that even in fifth compartment there was such a temperature that it was impossible to touch equipment and hands had to be wrapped in towels (V. Slyusarenko, TR1)[2]. It was impossible to put out a fire of such intensity with shipboard equipment.

Air in adjoining main ballast tanks began heating up through the pressure hull, and this was intensified by many times with the increased pressure differential between the stricken compartments and the internal volume of the main ballast tanks, when it reached a value at which automatic drain valves intended for releasing remainders of air from sections of the ballast main blow lines might open. A seal failure of tanks occurred and hot gases began entering them from the compartments. Further, it was inevitable that cable lead-in stuffing tubes and the rubber seal of these tanks' access openings should burn out and that hydraulics should heat up and expand in the closed loop of the drives of hydroelectromanipulators controlling tank vent valves (the manipulators were in the "authorized" neutral position), as a result of which the valves moved to the open position. In addition, the rubber base of the branch pipe for the stern tube stuffing box cooling system was destroyed under the effect of fire and high temperature.

Churning water near the aft end and steam and charred particles escaping through aft tank flooding ports observed from the navigating bridge attest to high temperature in the aft main ballast tanks. The outer rubber coating was peeling off in whole chunks. Studies performed later show that its exfoliation can occur as a result of a breakdown of glue at a temperature of 300-400°C, which means that the submarine hull in this area had heated up to that order of magnitude at that time.

After pressure dropped and the fire died down, intensive cooling and a sharp decrease in volume of air subsequently

began in the aft main ballast tanks. Ballast tanks began to be evacuated, outside water entered them through the flooding ports (there were no kingston valves on this submarine according to the design project) and it also penetrated to seventh compartment through a non-watertight branch pipe of the cooling system. Moreover, the air cushion was evacuated from them through burned-out stuffing boxes of cable runs and through these tanks' slightly open vent valves, accelerating the filling of tanks with water and increasing the entry of water into seventh compartment. Disaster became inevitable.

Trimming by the stern and losing longitudinal stability, the submarine went under at 1708 hours.

Just what can the crew be blamed for? After the involuntary opening of the compartment air supply valve, a co-called "machine scenario" of the accident began to develop there, i.e., all the main physical processes and changes in position of fittings proceeded independently of people's will. Elements of technical equipment reacted to damage-producing elements in accordance with those design decisions which had been put into them during designing. Obtaining information about an emergency situation was supposed to have been supported by design, but the primary control on Komsomolets could not know either the current temperature value or the level of water in seventh compartment and ballast tanks, since there were only draft marks inscribed on the outer hull to monitor draft on the SSN, and also instruments for measuring list and trim. But it is unrealistic to use them for their direct purpose in a heavy sea. It was impossible to pass to the stern along the superstructure, and going to the bow was senseless, since the forward end configuration practically precludes the possibility of seeing them from the side of the submarine. Add to this the wave action, in which even from a clinometer and trim indicator it is possible to judge only the tendency for a change in trim and not its current parameters.

It was possible to intervene in the course of events in some way only from the two aft compartments cut off from the rest. It was to there that submarine commander Captain 1st Rank Ye. Vanin and engineering department head Captain 2nd Rank V. Babenko attempted to make their way through all the hours of the ship's agony.

Much of what has been said here is not in Romanov's book, just as there also is no sufficiently correct explanation of the causes of the submarine's loss. The author asserts that the No 10 starboard and port main ballast tanks were completely full, and also (one has to understand from this) seventh compartment. There is not a word in the book about other main ballast tanks of the after group (Nos 8 and 9). This is understandable, for then it will be necessary to explain why the temperature in them was almost the very same as in the No 10 main ballast tank adjoining the stricken compartment. This is far from everything, but it already permits judging the correctness of the "sentence" handed down by the deputy chief designer, which says that "during the entire emergency the Komsomolets primary control proved incapable of assessing the situation in stricken compartments, of realistically monitoring the submarine's buoyancy and metacentric stability, and of taking effective steps for her damage control."

As the main method of researching the tragedy, the author chose to break down the unified, dynamic process of development of the emergency into individual fragments and actions in which mistakes are hunted without considering the technical and physical possibility of performing a particular operation or the status of equipment, including connected and supporting elements. He plays a continuous game with time. Sometimes it even seems he believes that the main duty of ship personnel in that emergency situation should have been to synchronize watches in recording events. But the people fighting in smoke and fire did not always do this, and so the author confers on himself the personal right of believing some and not believing others. And he makes wide use of selectivity: in one episode the testimony of a given person is permissible to believe, and in another it is not. And this is done again only based on the author's own conclusions, which sin in innuendoes or even concealment of a portion of information.

Take just the question of the submarine's speed prior to the accident. It was 8 knots according to the deck log, but Romanov notes that Captain 1st Rank B. Kolyada, the deputy division officer, and Captain-Lieutenant I. Orlov, main power plant remote control group officer, allegedly reported that the speed was 6 knots. (This discrepancy served as the occasion for a verbose dissertation on the absence of order in the Navy in general and on Komsomolets in particular.) True, the book is silent about the fact that both Kolyada and Orlov were sleeping at the moment described. Orlov said nothing anywhere about the submarine's speed, and Kolyada said the following word for word: "I turned over the watch to the commander when speed had been decreased to 6 knots and departed from the primary control." That is how the author takes advantage of any pretext to arouse doubts as to the crew's ability to perform tasks and act in an emergency situation.

In addition, Romanov attempts to construct a version of an earlier outbreak of the fire, which would have reflected slower progress of the initial stage of the accident and thereby would reinforce the conclusion of the personnel's "inaction." For this he marshals facts such as Warrant Officer V. Gerashchenko's statement about a light blinking in the gyro station before the accident and about the time the alarm was sounded, entirely without considering the navymen's mental state in that period. But that same Senior Warrant Officer Gerashchenko completed his explanatory note as follows: "It is possible that I did not lay out all the facts in succession, since everything is so intertwined that it is difficult to grasp and generally think about this."

Crew members felt the beat of seconds and minutes in different ways. Stunned by the events, the survivors stood before a state commission practically on the day after the disaster. Having passed through all circles of hell, they did not even suspect that their answers, at times muddled and contradictory, would be used by someone above all against themselves without any allowance for a condition caused by a very serious shock.

One has to be astonished at how much of a kind of movie video impression of naval reality there is in the book: no matter what happens on a ship and no matter what the situation, subordinates must report precisely and, having received an order, must execute everything immediately and completely. And on hearing the report, commanders must

formulate notes in the deck log briefly but at the same time completely enough so everything is clear to future investigators, then make the only correct decision after a thoughtful silence, but better yet instantaneously. But in a real situation, especially a dangerous one, everything is different and enormously more complicated. It is as if Romanov does not know that a black-gray curtain of smoky fumes "stood" in the control room for practically all the time of the emergency. "One's hand could not be seen beyond 10-15 cm" (Yu. Podgornov, EN[2]). And it was impossible to shut off one of the main leaks, along the control air return line, after destruction of air systems in seventh compartment, but this is an unessential detail for the author.

There is one other point which must be mentioned. The very limited research conducted as of the present time to study human psychomotor characteristics under extreme conditions does not permit presuming variants of logic of a person's specific actions, but it does permit concluding that no matter how well trained a person is, each emergency situation always is unexpected for him and so his actions may even be erroneous. Consequently, the orientation in designing on the fact that by his actions a person will be able to make up for unresolved technical problems under conditions of insufficient or contradictory information appears absolutely unjustified.

Almost the entire spectrum of the display of human feelings was present on Komsomolets as well that day. There were people aboard the submarine, not robots, as some would like. Yes, there were mistakes, there were actions that were unexplainable later and dishonesty even was displayed afterward. But they are not what determine the overall picture. There were, however, more than enough examples of mutual assistance, friendly support and comradeship.

The post of Seaman R. Filippov, a very young lad, was in the vicinity of intensive entry of smoke into third compartment. And if his hands shook and he could in no way hook into the individual breathing apparatus, this still does not indicate his poor training. Warrant Officer Slyusarenko helped him. Overcoming nervousness, Filippov dashed to ready the diesel generator for a restart. By the way, the generator was started by that same Filippov the first time as well, but had to be shut down during the fire in the compartment. But it is not designed for an independent restart. (Also not a word about this!) But the "poorly trained" ship specialists also started it a second time; true, this was after a number of change-overs in damaged air and electrical power systems. Soon after this Filippov became ill and was evacuated to the superstructure, and engineering division officer Captain 3rd Rank A. Ispenkov took over the battle station. He provided the ship with electrical power to the end and shared her fate. Filippov also died...

In analyzing the accident it is very important to determine the moment when the high pressure air system opened, for this substantially affected its further course. The deputy chief designer asserts that this occurred while the after group of main ballast tanks was being blown, and the decision to do this was "another serious mistake of the submarine leadership." He believes that it was during the blowing, when high pressure was being supplied to lines in the fire zone that "a break of the No 10 port main ballast tank emergency blow line occurred. . . . Practically all the air intended for blowing ended up in seventh compartment, which led to a local fire developing into a voluminous one."

Yes, objective data indicate that the No 10 port main ballast tank blow line broke, but when and under what circumstances? Doesn't the author really know the results of tests conducted during the investigation? Or perhaps he is taking into account that a very limited number of persons is familiar with this document, although the results are not classified. Well then, in the tests the blow line lost seal at temperatures on the order of 700-900°C, and the compartment high pressure air supply valve opened at 200-250°C. With that temperature ratio it is difficult to figure on the improbable happening—the valve was actuated later than the line opened.

But let us continue examining the dynamics of this specific process. In the course of coming to the surface, the chief boatswain's mate reported that first the vertical rudder and then the stern diving planes could not be controlled (Yu. Paramonov, EN). At 1113 hours, after oil pumps shut down, the geared-turbine propulsion unit emergency protection tripped and the submarine lost way. Depth was 152 m and it was a difficult situation. At the commander's order, A. Zaytsev (EN) blew the midship main ballast tanks, then blew them again at 70-100 m. When the submarine had come to a surface condition, he also blew the end main ballast tanks. Here Zaytsev, the only witness, has difficulty naming the moment when pressure in seventh compartment became 6-7 kg/cm^2—before or after the end main ballast tanks were blown. But both Zaytsev (EN) and A. Verezgov (TRI) assert that the submarine surfaced on an even keel—list and trim were zero. Then Zaytsev writes that a 4-6° list to port appeared 1-2 minutes later. Speaking of this same thing, Verezgov names a somewhat different time: 5-6 minutes after surfacing. "Then the air went as if they were blowing the No 10 starboard" (Verezgov, TRI).

Thus, surfacing without a list signifies that both the No 10 starboard and port main ballast tanks were completely full. It is impossible to blow one of the tanks through a broken line in a few minutes. And the author's supposition that the port tank was not blown because... the broken line was clogged by combustion products is totally off the wall. But there is one other fact here to which little attention is given. In the interview Zaytsev says that while coming to the surface, somewhere around a depth of 50 m, control of sixth and seventh compartment air systems was disconnected. Then just how could the end main ballast tank blow valves open?

Summing up what has been said, it is possible to advance the following version of the development of events in the episode in question. In the process of coming to the surface, at depths from 150 to 50 m, the seventh compartment high pressure air supply valve spontaneously opens. Pressure in the compartment grows in avalanche fashion and the fire becomes voluminous. Remote control of machinery, above all in seventh compartment, begins to malfunction. At this time Zaytsev switches on the blowing of end tanks, but blow valves open aft only for the No 8 and 9 main ballast tanks. The submarine comes to a surface condition on an even keel, and it is here that blow valves for the No 10 main ballast tanks, similar in design to the compartment high pressure air supply valve, also open spontaneously.

Lines are charged with the high pressure of air, but only the port line breaks and the starboard line holds. Blowing of the No 10 starboard main ballast tank begins. This is the process Verezgov observes. (He had seen it more than once and classifies it correctly.) A port list appears. Later, in the total absence of reliable information and under the weight of circumstances at hand, the primary control decides to correct the list by counterflooding the No 7 starboard main ballast tank. Meanwhile, the No 10 port main ballast tank is constantly being blown through the broken line by the pressure of the air medium of stricken compartments aft, and the list shifts to starboard at approximately 1400.

All thoughts of the primary control at that time were taken up with saving people and normalizing the gaseous atmosphere of compartments. I am not speaking of smoke and carbon monoxide concentrations—they were appalling. Exhausted by continuous struggle and the effect of toxic combustion products, the people in the final account made a mistake, which brought the tragic outcome nearer, although it did not dictate it. After returning from the latest damage-control party, Warrant Officer V. Kadantsev blew the No 5 and 7 port main ballast tanks on order (TRI). The approximate time was 1625-1635. One can agree with Romanov in assessing this event. Along with reserve buoyancy increasing, the trim by the stern also grows, entry of outside water increases, and the longitudinal stability curve arm decreases with the blowing of individual tanks in the forward group and with most of the after tanks full. Crew members' words about an "unexpected burst of outside water" must relate specifically to this point in time.

But fairness requires calling things by their right names. The spontaneous opening of the seventh compartment high pressure air supply valve under the effect of high temperature and the absence of kingston valves in ballast tanks are the most important cause of the submarine's loss from a technical standpoint. The personnel's actions could postpone the tragic finale in time only in some way, but even this required technical means of obtaining reliable information about ongoing processes and of forecasting the development of the emergency situation, and the submarine was not equipped with them.

In reading the book, the most distressing impression is left by the position of the author, who demonstrates a lack of desire to look into how the ship's technical equipment proved itself and whether or not particular design solutions were justified in order to take this into account in subsequent designing.

In analyzing this accident, it is impossible not to see that a gap occurred between the degree of the submarine's saturation with sophisticated technical devices and the people's psychophysical capabilities. The automation of control processes as well as the methods of obtaining and processing information on the status of individual systems, complexes and spaces proved to have been designed for operation under normal conditions and demonstrated their unsuitability in a difficult emergency situation. Some systems even began to transport damage-producing elements into other compartments, contributing to the appearance of secondary accidents in various places.

The situation changed swiftly. The announcing system malfunctioned while coming to the surface (1116 hours, DL). At 1121 there was a fire in fourth compartment (the starting station for the reactor primary loop pump was burning), and at 1122 there was ignition of the plane tilt indicator transformer unit in third compartment with the subsequent appearance of an open fire at the steering system console. At the very same time in fifth compartment there was a burst of hot gases coming from sixth compartment through the gland exhauster system line of the steam-turbine plant turbo-pump units, which was impossible to close from fifth. "The flame . . . swept as if from a flamethrower along the entire passageway from the aft to the forward bulkhead" (S. Dvorov, TRI). Seven of the eight persons in the compartment were burned.

The loss of remote control noted earlier led to the impossibility of turning off the after hydraulics pump assembly in seventh compartment (no other cut-off valves are provided in any of the other spaces). As a result, all working fluid was lost because of the system's loss of seal, after which all change-overs in general ship equipment could be done only manually from local stations. (Damage-control parties must be sent out for this purpose each time.) In addition, the masts, including antennas, began to lower under their own weight, worsening communications with shore command posts. As a result, a voluminous fire raged in two of the submarine's seven compartments 20 minutes after the beginning of the emergency. Pressure in them reached 13 kg/cm^2. In three others there were instances of ignition of varying intensity. Compartments were filled with smoke. The personnel were forced to hook into individual protective gear, which substantially limits the possibility of performing damage control.

In such a major accident the flow of information to the primary control grew by several orders of magnitude compared with day to day deployment life. Without having reliable data on the situation in stricken compartments, everyone was trying to understand and evaluate the processes occurring there. Under those conditions it simply became impossible to grasp the entire flow of information, generalize it and find decisions. But even this is not everything. In the control room itself it was necessary to extinguish ignition of the Korund console, and carbon monoxide and smoke were penetrating into the compartment, since trim tanks ruptured in seventh compartment and smoke and gas went into third compartment under pressure along the main line running through the entire submarine, through a safety valve which had been actuated. The line shut-off valve gland turned out to have been torn out and it was impossible to seal this line. Moreover, air also was escaping in that compartment in the vicinity of the air console, where it was also impossible to cut off anything.

Under these conditions an entry appears in the ship's deck log: "We have not yet looked into the reason for that." Yes, there was no time to decline cases and put all parts of a sentence in their places. (Remember? The hand could not be seen at 15 cm!) And the letter "t" is missing in one word of this sentence. Whom does one have to be to speak ironically about the resultant phrase in the quiet of an office?

Lieutenant I. Molchanov, who was in the primary control from the first to the last minute, kept the deck log. Only once did he go topside to breathe fresh air. He was lifted from the water aboard a tender. He was one of the first to

feel fine and to go have a smoke... Later the physicians would record that irreversible changes already had occurred in his body, which were the cause of death.

Yes, a state of shock from the first minutes of the accident, a swift surfacing, battle against fire and smokiness of the primary control, transmission of a signal about what happened, attempts to deal with the list, shut-down of the diesel and the absence for a certain time of the damage control specialist team leader, who, according to the bill, departs for the surfacing chamber during surfacing (there he received an order from the senior watch officer about shoving off the life rafts) did not permit immediately discovering the continuing escape of air from connectors [peremychka] of first and third compartments. Only after a certain time was he returned to the battle station by the engineering department head and received an order to close the high pressure air subgroup valves. It is specifically that action which the deputy chief designer points out as the priority.

But with removal of pressure from the high pressure air line, the ship's fixed emergency breathing system filled with gases from seventh compartment. After hooking into it, two persons died in fifth compartment and another three in second compartment were poisoned. And so an hour of struggle had gone by. Losses: two persons in the after compartments (N. Bukhnikashvili and Kolotilin), seven burned in fifth, of which two (S. Bondar and V. Kulpin) were poisoned by gases from the breathing system and died, and another two were cut off from others in fourth compartment in the equipment recess above the reactor. This is no small part of the personnel of the ship's small engineering department.

The main direction of damage control naturally was aimed aft—these are the power compartments—and so damage control parties were manned primarily by engineering department specialists. Of course, there were enough of them for attending equipment that was operating serviceably, but there were too few for damage control. The designer obviously was not counting on that situation, and so in order to get away from this point in the book, he advances another accusation, this time about insufficient use of navymen of other command and staff departments.

The Komsomolets crew fought for the life of each person, helping victims, evacuating them to the superstructure (including also the navymen sealed off in the equipment recess), and not stopping damage control. For some reason the deputy chief designer does not mention this.

Meanwhile, the tragic outcome inexorably approached. But although almost everyone's strength was coming to an end and four persons even had died, the crew retained hope, for the ship was afloat with a reserve of high pressure air in the commander's group of cylinders—around 25 percent of the overall reserve. A question arises here: Was there a possibility to use it at the very last moment to blow the after main ballast tanks, which were filling with water, and remain afloat until the arrival of help?

Yes, theoretically there was, and the path is as follows: from connector to connector, then through the torpedo tube air supply system and through another two systems—outside device air supply and the diver blow line. But here too one has to know the particulars.

Nowhere is such a method indicated either in instructions or in recommendations or in the system descriptions. Moreover, it is written in the designing central design bureau recommendations: "With damage of the No 4 high pressure air connector (which in fact happened) it is impossible to supply air for blowing the No 8-10 main ballast tanks." Moreover, highly qualified specialists of the designing central design bureau spent an entire three (!) working days looking for the aforementioned path, and the laid-out system diagrams took up a table around 5 m long. But Vanin and Babenko did not have these three days, just as there also was no such table, which means no opportunity to supply air to the aft main ballast tanks. But knowing all this, Romanov writes: "But the personnel could not use this high pressure air reserve because they did not know how to do this. The diagram of the high pressure air system which they tried to understand also did not help."

I believe no one is capable of understanding instantaneously and in detail what occurs on a submarine at the moment an emergency begins. That evaluation always is approximate and is based on an analysis of the general behavior of the ship and her systems. The situation is detailed with the receipt, or more often the collection, of additional information. It was only months later in special full-scale tests that many experienced navymen, and the designers themselves for some reason, learned about how and in the presence of what damage-producing elements a particular valve operates or other equipment behaves.

It would be possible to write about much more, but this evidently is in the future. Such is the tragedy of the submarine, and such is the honor of her crew.

In reading the book, one forms the impression that the deputy chief designer of the design project constantly seeks formal reasons explaining why, in designing Komsomolets, particular Navy requirements were not realized, and he advances the idea: Let the Navy formulate such requirements on time and correctly and then absolutely safe ships will appear. But with that statement of the question, the responsibility of design project authors for what happened is fully precluded. Then why was the book written? To reveal crying shortcomings in "someone else's house"? But again the question: In that case why this hostile tone? Evidently something still gives the designer no rest, and he would very much like to free his soul publicly of the burden of moral responsibility for the loss of the ship.

Of course, all of us alike have a need for ships not to burn and sink. This is a complex problem and no matter how much we work on the accident rate, ships, vessels, spacecraft and aircraft still are lost, trains collide and derail, petroleum and natural gas lines explode, plants and hotels blaze, and accidents happen in mines. There are objective causes for this connected above all with the growing complexity of equipment and the increased concentration of energy reserves in it. There also are subjective causes... And the problem must be solved by a well-conceived system of measures beginning with the earliest design stages.

A critique of the Komsomolets disaster shows that among the important starting premises which shape views on the problem of survivability, one has to single out the possibility of an emergency situation arising. Since that is so, then there

must be means of diagnosing the pre-emergency condition of complex objects, which already is a statewide task.

Further, a particular emergency situation can develop and from a certain point on progress as a complex derivative of the simultaneous or successive action of two or more damage-producing elements, i.e., certain phases or stages can be singled out in it. Therefore measures envisaged only for the initial phase may prove insufficient, even considering that they are actively accomplished by the crew. In designing, it is necessary to analyze all stages of an accident's development and, sad as it may seem, right up to the most serious result. Accordingly, it is necessary to work out measures for countering all damage-producing elements for each stage.

The scenarios of an accident's development being considered of course must be supplemented by possible crew actions, but with a sober assessment of the extent to which it is possible to count on its active, decisive actions and also what technical equipment supports these actions. The designing of a ship represents a many-sided process of resolving large and small contradictions, since on the one hand it presents diverse methods for achieving the set goals and, on the other hand, requires their coordination with decisions supporting other properties of the ship under conditions where events differ and priorities change because of this.

Many years of experience show that, alas, primary attention in designing is given to ensuring so-called normal operating conditions, where everything is serviceable, battle stations precisely exchange and evaluate information and report to the commander, and the latter makes a decision. But attempts to examine accident models as applied to a specific object lead to a combinatorial explosion. It turned out much easier to provide for several regimes of combat employment and day to day use than to forecast all possible variants of the appearance and development of emergency situations. But without this it is impossible to determine a sufficient set of protective means and work out detailed instructions for personnel.

For a long time the uncertainty and diversity of possible accident scenarios did not allow viewing the problem of survivability for a ship as a whole. The Navy and designers proceeded primarily from practical experience in working out recommendations based on experience gained. And after the Komsomolets tragedy a specific comprehensive program was compiled for increasing the survivability of Navy ships. In its scope and directions it greatly exceeds any of those carried out earlier.

There was some progress in obtaining a quantitative assessment of ship survivability in connection with the development of probability and logic-probability methods, which permitted comparing closely related variants of ships for one general criterion. But even this is not enough today. It is important to be able to argue the design decisions being made right down to a single element—a valve, a line, a fuse. It was the stability of such elements that played a deciding role in the fate of Komsomolets. For this, one has to develop detailed physicomathematical models of processes occurring in an accident in place of generalized abstract damage models.

At the same time it is also necessary to consider the functioning of ship systems and complexes, i.e., existing power, information and control connections, so as not to miss "weak" links. The task of obtaining reliable information about the limiting conditions of working capacity of different kinds of equipment directly adjoins this: how it behaves in an accident and at what values of damage-producing elements it fails.

Such work is being done by Navy organizations and industrial establishments cooperating with them, but as of today it must be stated that available personnel and means are very limited. Therefore evidently it is necessary to solve the problem along paths of cooperation with other sectors such as the maritime and river fleet and to bring in academic institutions, or perhaps still solve it within the framework of a statewide program?

The Russian Navy tricentennial is approaching. There have been many glorious, heroic pages in its history. There also were tragic ones. But from generation to generation, Russian navymen invariably displayed valor, fearlessness, high proficiency and selflessness. And a worthy place in this rank is occupied by the Komsomolets crew, which, in the words of the government commission, truly "displayed courage and performed their duty to the end."

The names of real heroes should be given—Yevgeniy Vanin, Valentin Babenko, Vyacheslav Yudin, Anatoliy Ispenkov and Vladimir Kolotilin. Years will go by, a new Varyag will go out on the ocean expanses under the Russian flag, and numbered submarines or perhaps submarines named for the heroes will go into the water's depths. We navymen firmly believe this.

Footnotes

1. See MORSKOY SBORNIK, No 6, 1990.
2. Here and further: DL—deck log; EN—explanatory note; TRI—tape-recorded interview.

Large ASW Ship 'Admiral Chabanenko' Launched

94UM0476B Moscow KRASNAYA ZVEZDA in Russian 17 Jun 94 p 1

[Article by Valeriy Gromak: "'Yantar' Has Awarded the Russian Navy a Valuable Gift"]

[Text] A festive rally dedicated to the launching of the Large ASW ship Admiral Chabanenko was held at the Yantar Baltic Shipyard. Captain 1st Rank Igor Bykov commands the new ship.

The commissioning of the new warship is a valuable gift to the Russian Navy on the eve of its 300th anniversary. Speaking at the rally, Admiral Vladimir Yegorov, Baltic Fleet commander, emphasized that the Large ASW ship Admiral Chabanenko is a unique ship, built using the latest technology.

UKRAINE

General Oliynyk Inspection, Notes Weapons, Equipment Problems

94UM0470A Kiev NARODNA ARMIYA in Ukrainian 3 Jun 94 p 2

[Article by NARODNA ARMIYA correspondent Major Oleksiy Trubitsyn under the rubric "End-Of-Training-Period Performance Evaluation: Results, Analysis, Experience, Conclusions": "Gloss Over Patches, or More About the Fact That a Single Cavalry Charge Does Not Help"]

[Text] The familiarization of Colonel General Ivan Oliynyk, deputy minister of defense of Ukraine for armaments and chief of armaments of the Armed Forces of Ukraine, with the depot service and the status of materiel at the Hvardiyskyy garrison began at the ZRP [surface-to-air missile regiment] commanded by Colonel Viktor Kozlov. Prior to that time, the beginning of the fourth day of the end-of-training-period performance evaluation, the following situation, at first sight paradoxical, had clearly taken shape in the division: The elite units had been noticeably inferior to motorized infantry and tankers on virtually all scores. After all, it has always been believed (and this was borne out in practice) that military collectives such as the ZRP, signal battalions, reconnaissance battalions, artillery regiments, etc. in large units would be head and shoulders above motorized infantry or tankers who account for the bulk of the collectives. The current performance evaluation has noticeably changed the emphases in well-established approaches. Precisely the subunits that shoulder the bulk of the load in the garrison were superior to others. This was confirmed by a detailed familiarization by Colonel General Ivan Oliynyk with the organization of the depot service and the maintenance of materiel and armaments in the division headed by Colonel Volodymyr Mozharovskyy.

I will specify right away that the ZRP personnel, as well as other units of the division, had prepared for the performance evaluation and done a lot to make a good showing during the tests. Nonetheless, as it came out later, the emphasis in the collective was laid on outward signs of welfare. Unfortunately, they did not reflect the genuine state of affairs in the regiment on the issues of interest. The very first tactical task set by Colonel General Ivan Oliynyk in essence put the depot detail at a loss. The servicemen were unable to put out a "fire." For example, dutyman in the depot Private Vasyl Khandruk was unable to use the fire extinguisher properly, and the fire extinguisher itself raised doubts as to the time when it was last charged. The crews of designated prime movers which underwent serious inspection and the materiel itself caused many complaints from the deputy minister of defense. In view of this, he observed that he had grave doubts that the unit command paid due attention to the issues of the depot service. It was indeed so: The shortcomings revealed indicated that first of all the regimental commander did not work in the depot on a regular basis; his visits were mostly of a contemplative nature, and nothing else....

Examples of this were found in fire control vessels which were not filled with water, the presence of foreign objects in the cabs of designated prime movers, and the absence of necessary documentation at work stations (especially with regard to safety measures). As far as the condition of the materiel and armaments is concerned, the regiment did not look the best either. In particular, motor vehicles have not been serviced and have been neglected, in the opinion Colonel Hryhoriy Talpa, deputy chief of the Central Motor Vehicle Directorate of the Armed Forces Armaments Staff, who had spent more than one day there.

Hryhoriy Zakharovych said: "The tanks of most vehicles have long been empty. However, they have not been treated to prevent metal corrosion; moreover, from time to time the materiel is used. We should raise the issue of the additional mothballing of such vehicles and putting them into the emergency reserve in order to save them for the Armed Forces."

Virtually all the issues which the chief of armaments considered in the process of inspection in the regiment gave rise to concern, especially safety measures at work stations. Cables not properly laid were encountered almost everywhere; warning signs on electrical distribution boxes were absent, and so on. Captain Oleksandr Pavlenko, the regiment's repair company commander, heard many rebukes addressed to him that day. However, the regimental commander heard even more. This is easy to understand: He is precisely the one who is primarily responsible for everything that happens in his domain. It came out that Colonel Kozlov was not a frequent visitor to the depot, and most frequently he was actually a guest because he completely lacks a systemic approach to encompassing the main issues of the vital activities of the regiment, including the depot service. Colonel General Oliynyk noted this, observing that the commander must have a precise schedule for monitoring the main installations and services of the unit, of when specific assistance is provided to subordinates.

The following could be understood based on what the officers of the tank and motor vehicle services of the unit said: Their commander plays exclusively the role of an inspector, and then an impassive inspector who merely registers shortcomings but does virtually nothing to eliminate them. Hence the result of the ZRP depot inspection was logical: Most subunits got unsatisfactory evaluations; the PTOR [Maintenance and Repair Facility] was closed because of the absence of all documents and preventive measures associated with work safety at the installation. Despite the cleanness and fresh paint glistening at all work stations, the in-depth shortcomings did not escape the attention of the general who, in his time, climbed many rungs of the organizer-commander.

The depot of the regiment commanded by Lieutenant Colonel Serhiy Prykul appeared to the Ministry of Defense commission to be the direct opposite of what they had seen before. For example, the classrooms and stations at the KTP [technical control center] were equipped with everything necessary. The very first materiel checked out—that of the reconnaissance company—pleased the eye. The subordinates of Captain Ihor Hasanov, as they say, knew their jobs well, proceeded with confidence, and answered questions with knowledge of the subject matter.

The subsequent walk-through in the depot and familiarization with the personnel and materiel indicated that the regimental command has in-depth knowledge of the issues of the depot service and does a lot to keep up the standard of specialist training and materiel maintenance and repairs.

Indeed, at present it is hard for everybody to work, and for unit commanders in particular. Nonetheless, for some reason some of them refer to difficulties that hamper the effort while others look for ways to solve the problems facing their collectives and find them.

As far as the shift in emphasis with regard to the "elite" nature of units is concerned, it is to my mind caused by an appreciable decline in the interest of officers in the service. After all, previously this particular category of servicemen determined the identity of, say, ZRP's and signal battalions in which the percentage of officers is much greater than in motorized infantry or among the tankers. However, this is a topic for a separate discussion. Let us only observe that even insignificant omissions in all services which are not uncovered and eliminated in a timely manner may cause serious consequences. The depot service is not an exception. Therefore, as I see it, observations by Colonel General Oliynyk about the need for commanders at all levels to have a system of work which rules out the omission of particular issues are very important. Paraphrasing the well-known proverb somewhat, we may safely say: Do not postpone until tomorrow what you can eliminate today. It wi!' turn out to be both more difficult and more expensive....

Spetsnaz Engineer Troops Display Skills

94UM0471A Kiev NARODNA ARMIYA in Ukrainian 18 May 94 p 2

[Article by NARODNA ARMIYA correspondent Major Oleksiy Trubitsyn under the heading "End-Of-Training-Period Performance Evaluation: Analysis, Experience, Conclusions": "The Combat Training of a Special Engineer Brigade Is Improving: Our Correspondent, Who Has Spent Three Days in the Military Collective Commanded by Colonel Oleh Halyas, Was Able To Fully Ascertain This"]

[Text]

The Results Hinge on Knowledge

The inspector, Colonel Leonid Hlutskyy, told the officers of the brigade command a few minutes before the commencement of an examination in protection from the weapons of mass destruction: "Ultimately, your final grade will hinge primarily on your level of theoretical knowledge rather than the practical skill of meeting particular performance standards...."

The chief of the combat training department of the Directorate of the Radiological, Chemical, and Bacteriological (RKhB) Defense Troops of the Armed Forces handed out examination cards, which resembled cards for passing an examination on motor vehicle traffic rules and set the time: 20 minutes. Each examination card had four questions, with four different answers, of which one was correct. At first sight, the questions were not difficult, "at the level of a sergeant of the chemical troops," as Colonel Hlutskyy observed.

However, a closer familiarization with the examination cards revealed that certain questions required the examinees to be in possession of special literature. Unfortunately, not a single textbook or handbook turned out to be available in the classroom. In response to a remark from the inspector, the chief of the brigade RKhD [radiological and chemical section] Major Oleksandr Kopetskyy admitted that the situation with special literature is difficult: For a long time now, it has not been supplied to the unit through centralized channels. Leonid Ivanovich promised to sort out this matter and help the engineer brigade.

To my question about the reason for renaming the command, he said that the abbreviation RKhB [radiological and chemical warfare] reflects the essence of the troops the best. He noted: "There are no chemical weapons in Ukraine; we train the troops to protect themselves against the weapons of mass destruction."

Among other things, Colonel Hlutskyy is one of the officers who has ascertained firsthand what direct radiation and irradiation are when he commanded a special unit during the Chernobyl catastrophe. He is absolutely convinced that it could have claimed considerably fewer victims had servicemen and especially their commanders been prepared for such circumstances in greater depth.

For this particular reason, Colonel Hlutskyy's main criterion of the preparedness of officers for protection against the weapons of mass destruction is found in their ability to organize protection for their subordinates, ensuring in the process the accomplishment of the combat mission under conditions of terrain contamination and a rapid elimination of the consequences of the use of radiological, chemical, and bacteriological weapons. This cannot be done without specialized expertise.

The questions on the examination cards fully reflected this approach. A position held by an examinee was also taken into account, to some degree, in the grade for theoretical knowledge., whereby only a commissioned or warrant officer who is far removed from the personnel in his official daily activities could count on a slight indulgence.

Captain Oleksiy Vorontsov, deputy chief of the armaments service, was the first to answer. He made only one mistake and got a grade of four. His direct commander, Lieutenant Colonel Oleh Kulchytskyy, deputy commander of the brigade for armaments, nearly made it to an excellent grade: He got four plus. The answer of Lieutenant Colonel Valeriy Nestavalskyy, the chief of staff of the brigade, got the same grade.

In turn, Lieutenant Colonel Volodymyr Kravchenko, Senior Lieutenant Serhiy Stupak, and Warrant Officer Valeriy Hardus could not do better than three. This was primarily due to the fact that questions on their examination cards required consulting special literature on protection against the weapons of mass destruction....

Later, at the drill field, performance standards were demonstrated and various tactical problems were solved. As far as performance standards were concerned, there was no

problem: All servicemen acted with confidence and precision. However, there were hitches when it came to tactical problems, even the simplest of them. For example, not all of the officers and warrant officers knew what to do in response to the scenario instruction "tailwind" when removing the general-purpose protective gear: whether to turn to face the wind or to continue removing the means of protection as before.

One could not fail to notice the following fact, either: The condition of gas masks and general-purpose protective gear did not cause complaints from the inspector. The gear was excellent, of the latest model, and thoroughly fitted. Perhaps in this instance we should give credit to the chief of the RKhD service of the brigade, who, under the current difficult conditions with the material supply of the units, has been able to supply the servicemen with everything necessary to pass tests in protection from the weapons of mass destruction.

Captains Petro Ovchynnykov and Ivan Yakubchuk, Senior Lieutenant Oleh Kyrychenko and Warrant Officer Oleh Borysenko made a better showing then the others in practical actions. However, other servicemen proceeded confidently during the test. One could see that they work on performance standards for protection against the weapons of mass destruction on a regular basis, rather than from time to time. Therefore, the overall good grade for this training subject for the officers and warrant officers of the brigade is well deserved and reflects the standard of their training.

What is the state of affairs in the subunits? In about half an hour, I was able to get an answer to the question asked. The answers and actions of the personnel of the repair company of Senior Lieutenant Vasyl Vladovych came as a pleasant surprise to Colonel Hlutskyy: More than one-half of the servicemen easily met the most complicated performance standard "cape on through the sleeves, overshoes and gloves on. Gas!" [the preceding command appears in Russian in the original] A thorough check of the correctness of putting on the general-purpose protective gear did not cause major complaints. To be sure, individual soldiers' tricks were uncovered, but they were not a major influence on the overall result, on the good impression left by the actions of the repair personnel.

We must say that the soldiers looked proper during the tests. With the new fitted uniforms, good gear, a good combat morale, and the desire to distinguish themselves, they differed favorably from some officers, who passed the test on protection from the weapons of mass destruction without particular enthusiasm.

Colonel Oleh Halyas, the brigade commander, said in response to this observation of mine that at present, soldiers are better protected in every respect than officers and warrant officers. The soldiers virtually do not face the problems that seriously concern their commanders and chiefs. These are the timely payment of money, transportation to the place of service, and the housing problem. These are the main and vital problems for the officers and warrant officers....

Nonetheless, the brigade commander could be satisfied: The months of combat training in winter had perceptibly raised the standard of professional preparedness of the personnel. Difficult as it might have been, there had been progress in improving the potential combat readiness of the collective. The second good grade that the brigade received was yet another confirmation of this (the first grade was given for drill training).

"No Admonitions, the Personnel Is Well Trained"

Colonel Andriy Kulchytskyy wrote these words in the examination log upon the completion of the special training test. The collective commanded by Captain Viktor Babych and inspected by Colonel Kulchytskyy considerably surpassed the main performance standards for engineer training, having demonstrated in the process precise coordination and the understanding by each specialist of his place and role in combat.

The platoons of Senior Lieutenants A. Yevdokimov and S. Minyaylo and Lieutenants A. Vashchenko and S. Poslavskyy were assigned the missions of equipping a shelter in a pit and assembling dummy heat-emitting targets by using the MKP [expansion not identified] set, the OMU [operational magnetic amplifier] reflector, and improvised materials.

It goes without saying that these are not easy performance standards for specialists from the engineer troops. However, the subordinates of Captain Babych were not taken aback, but got to work with precision and without fussing. In the process, Junior Sergeants I. Pohorelov, S. Shayta, O. Kushpyta, I. Kochysh, and M. Dushynskyy, Privates S. Nazarov, A. Kukush, and S. Chernousov, as well as many others displayed high professional training.

Among others, the platoon of Senior Lieutenant Yevdokimov passed the examination without its commander (he was away on temporary duty), but worked confidently and thoughtfully. Junior Sergeants Kochysh and Dushynskyy managed to organize the execution of the performance standard properly, inspiring their subordinates to surpass it by personal example.

By all signs, the special training of the soldiers of the engineer brigade is at the proper level; commanders at all levels pay the closest possible attention to it. Captain Artur Zakon, who had been recently assigned as the chief of staff of the battalion, was in general charge of the work. This worked out very well for him.

The hand of the chronometer had not yet reached the time established by the performance standard when reports on the work performed began to come in from platoon commanders. Colonel Kulchytskyy thoroughly checked out all facilities and ascertained that they were erected expertly and in compliance with all norms and rules. A certain "pickiness" of the inspector was due to the fact that all platoons have noticeably "outpaced" the performance standard, and then by a considerable margin. However, there was no deception here, and the personnel indeed turned out to be profoundly prepared. All of the platoons inspected got a perfect grade.

Later, Lieutenant Colonel Valeriy Nestavalskyy, the chief of staff of the brigade, admitted: "Among others, the first battalion and in particular Babych's company caused us a lot of trouble quite recently as far as discipline and training are concerned. This is why it is all the more pleasant that

noticeable changes for the better have occurred there. As I see it, this is due to the fact that the leadership of the battalion has changed during the current training period, and the new leadership, first of all Major Vadym Shatkovskyy, has managed to organize effective combat training. This officer truly has his heart in it; he has a good professional training himself and knows how to organize training for his subordinates. His deputy for armaments, Major Valeriy Lutskyy, is also the right man for the job, as the saying goes. He is a knowledgeable officer and chief of staff. In a word, the soldiers have the people to learn from and the things to learn from them...."

The Female Servicemen of the Engineer Brigade Know History and Are Conversant With Law

From the very first minutes of the examination, the female group, whose humanitarian training was to be evaluated, gained the sympathy of the inspector. Warrant officers and sergeants in skirts had a good knowledge of the history of Ukraine and its army, were aware of current politics, and had their opinions and views about the topical issues of the present day. Warrant Officer O. Tarasyuk, the assistant leader of the humanitarian training group, Sergeant O. Ponkratova, Senior Sergeant L. Tsebro, and Junior Sergeant A. Byelukha set the tone for the answers.

Extensive knowledge of subject matter, logical sequence of presentation, and, I would say, courage in speaking before an audience were characteristic of their responses. As a result, a favorable situation developed for the presentations of the subsequent examinees.

Sergeant T. Ishchenko and another 15 servicemen, who had every right to claim a strong good grade, proceeded quite as confidently. Privates L. Henze and L. Kuzmik, who were unable to do better with their answers than a satisfactory grade, somewhat failed Major Symonenko's group. However, the mere two grades of three for 20 examinees could not seriously influence the overall good result.

Colonel Yuriy Halkin, deputy commander of the brigade for educational and sociopsychological work, observed: "Our ladies have a serious attitude toward their classes, and their leader is intelligent. Major Symonenko is the senior officer for cultural and educational work. His position, so to say, obligates him to be on the level. To be sure, the foundation of this group was laid by Captain Oleksandr Babych, which has recently transferred to the position of deputy battalion commander for educational and sociopsychological work. He is an expert officer with a broad view of the world."

....At the same time, Colonel Ivan Yazovskykh examined the officers of the brigade command in "humanities" elsewhere. Lieutenant Colonels Oleh Leshchuk and Oleh Kulchytskyy gave the most complete answers in the group of the brigade commander. Major Oleh Dyakevych also knew the material well.

The servicemen of the brigade also passed this test successfully.

They Do Not Lack Strength or Stamina....

We can say so with a full measure of confidence following an examination in physical training in the brigade. An overwhelming majority of servicemen displayed strength, stamina, and agility in a cross-country race, a 100-meter dash, and during horizontal bar pull-ups. The subordinates of Senior Lieutenant Vadym Hnatyk and Lieutenant Leonid Kozhukhar achieved excellent results. We should mention Junior Sergeant M. Nykymshyn and Privates V. Fedorov and V. Duda among the best.

We should mention that the officers of the brigade looked well during the examination. Deputy Brigade Commander Lieutenant Colonel Serhiy Leshchuk, Lieutenant Colonels Serhiy Titarenko, Valeriy Nestavalskyy, and Anatoliy Tarasyuk, and Major Oleh Dyakevych also made a great showing during this test, incidentally just as during the previous ones.

I asked Lieutenant General Volodymyr Bezrodnyy, the chairman of the commission and the chief of the engineer troops of the Armed Forces of Ukraine, to comment on the course of holding the inspection. Volodymyr Dmytrovych said: "By all signs, the brigade has advanced noticeably not only with regard to the issues of combat training but also discipline and organization. The dress of the personnel, their bearing, and the desire to distinguish themselves during the inspection are pleasing to the eye. I conducted drill inspection with two types of uniform, and understood that the command of the brigade has completely solved this issue, which is not an easy one at present. The personnel were properly clothed and had proper footwear."

Of course, it is premature to discuss final results. However, we can maintain with complete confidence that there has been progress in the brigade on all scores without exception.

Prospects for Peacetime Use of Ukraine's Space Assets Examined

94UM0445A Kiev NARODNA ARMIYA in Ukrainian 20 May 94 p 1

[Article by NARODNA ARMIYA correspondent Major Volodymyr Knysh: "American Nuclear Missiles No Longer 'Cover' Ukraine"]

[Text] **The strategic missiles of the United States will not be aimed at Ukraine as of 30 May 1994, and the launch stages of the SS-24 missiles may be utilized for the needs of the peaceful Ukrainian space program.**

As is well known, a governmental delegation from Ukraine composed of Vice Prime Minister Valeriy Shmarov, Deputy Minister of Foreign Affairs Borys Tarasyuk, National Space Agency General Director Volodymyr Horbulin and Deputy Minister of Machine Building, VPK [the Military-Industrial Complex] and Conversion Valeriy Kazakov, has returned from Washington.

Meetings were held at the Pentagon with U.S. Secretary of Defense William Perry, at the State Department and at the National Aeronautics and Space Administration (NASA). Consultations were held pertaining to the fulfillment of the trilateral agreements among Ukraine, the United States and Russia, cooperation between Ukraine and the United States in conversion programs for the defense industry, the monitoring of missile and space technologies, power engineering and the safety of nuclear reactors.

Questions associated with the early deactivation of missile complexes in Ukraine, among other things, were explored during the meetings with the head of the Defense Department of the United States, W. Perry.

American strategic missiles, as journalists were informed at a recent press conference by Valeriy Shmarov, will no longer be "looking" in the direction of Ukraine. A joint statement of the governments of both countries was adopted in which their devotion to relations of partnership, mutual trust, respect and the development of relations in the realm of security and defense was affirmed. The government of the United States announced that American strategic missiles will no longer be targeted either at Ukraine or the territory of any other countries as of 30 May 1994.

Ukraine, in the words of U.S. Vice President Gore, has proved that it is a reliable and responsible partner, especially in matters of arms control and the non-proliferation of nuclear weapons.

Valeriy Shmarov called question number one the negotiations on Ukraine's joining with the control regime for the proliferation of missile technology and equipment for its production.

The idea that Ukraine has somehow refused to participate in that prospective area thus does not conform to reality.

A memorandum of understanding between the governments of Ukraine and the United States was adopted on the transfer of missile equipment and technology. This document, signed by Vice Prime Minister Shmarov and U.S. Vice President Gore, provides for strict monitoring of the proliferation of nuclear technologies, the performance of joint inspections, and consultations and an exchange of information in the event of the transfer of missile equipment and technology. It was emphasized that this missile technology control regime rules out the creation of impediments to the development of the Ukrainian national space program, or to cooperation with other missile and space powers in that sphere.

The United States has thus *de facto* recognized the right of Ukraine not only to preserve, but also to develop further its own scientific, technological and production potential in the missile and space field. Our country has also been recognized as a full-fledged participant in international cooperation and a participant in the world aerospace market.

Common missile-engineering interests exist, by the way, between Ukraine and Russia as well. Valeriy Shmarov, answering a question about this, stated that Russia is ordering missiles and satellites from Ukraine. And we are ordering missile engines.

As concerns the prospects for the existence of "Ukrainian space" programs and the participation of our state in the space market, Ukraine will "go in" for that if it has something to go with, and if there is a consumer for our goods... The legal support exists today. A harsh market fight is expected. We are already feeling pressure on the part of the American firms that dominate the space field today, said Valeriy Shmarov.

But the Americans acknowledge today, as they have before, that we have one of the best and cheapest launch vehicles, especially the Zenit-3, a modification of the well-known series. There is also a place for them in the Freedom-Mir program. It is acknowledged that our space components have "substantial weight" in that program. They are talking about systems for guidance, docking, on-board systems etc. There is interest in the United States in our developments in the field of space welding, and problems of the effects of gravity on the person. The general director of NASA acknowledged, during a meeting with Valeriy Shmarov, that the United States is prepared to cooperate with Ukraine in the world space field.

The utilization of converted launch stages is a very attractive project. The placement of a satellite in orbit using the launch stage of the SS-24 missile is entirely possible. The more so as we already have a legal basis for the activity in the missile and space sphere.

It was indicated that the Americans are implementing conversion programs somewhat slowly. A corresponding discussion pertained to this. The so-called "List No. 1" exists in the United States, on which there are 35 Ukrainian enterprises that are subject to conversion. The corresponding partners for them are already being sought in the United States. There is also a project being carried out by the American firm of Westinghouse and the Ukrainian firm of Khartron (Kharkiv)—the installation of an ASU [automated control system] for operation in nuclear-power plants and other power-engineering projects. The Nunn-Lugar fund allocates five million dollars, with another 20 million from Westinghouse...

We will hope that the partnership of the two nations in conversion programs will develop in the future as well.

ARMS SALES

Prospects for Sales to South Korea Said Dim

94UM0492A Moscow KRASNAYA ZVEZDA in Russian 10 Sep 93 p 4

[Article by Lieutenant Colonel Mikhail Pogorelyy: "When Politics Impedes Mercury. At the Trading Crossroads"]

[Text] **Military-industrial circles of Russia have apparently not forgotten the heightened expectations of great success when during the visit of the Russian Federation president to South Korea they heard voices from there in favor of the development of military-technical cooperation between our countries. The joy of these expectations is understandable: South Korea is a rich country (by our standards, in any case). To gain such a trading partner would mean providing enterprises of the defense complex with orders, specialists—with jobs, ...**

The South Korean press also reported on specific programs and arms systems, and the prospects for purchasing them were already being discussed at the parliamentary level: They were discussing, in particular, MIG-29 aircraft and S-300 antiaircraft missile complexes. But after the first burst of interest in industrial and political circles of the Republic of Korea there began an incomprehensible, ever longer silence. The extremely promising projects were left, as it were, "suspended in air."

Russian Deputy Prime Minister A. Shokhin tried to give another boost to cooperation in the area of deliveries of weapons and defense technologies (he made it clearly understood in the South Korean military-industrial complex that he wished to acquire these commodities as well, possibly the most costly in countries with developed economies). In Seoul he delivered a package of proposals for military and technical cooperation prepared in our country. As far as we know, it contained no fantastic, unfeasible projects. Again Russia was offering safe high-quality and inexpensive—by world standards—commodities: the MIG-29, Su-27, combat helicopters, air defense systems, and military technologies that have become well known.

ITAR-TASS published Seoul's response a couple of days ago. Colonel Ko Gen-sok, chief of the foreign policy department of the Republic of Korea Ministry of National Defense, politely expressing his belief in the rich possibilities of the development of contacts between Russia and South Korea, at the same time basically let it be understood that there was no point in expecting actual contracts in the near future.

This statement, essentially a refusal to continue dialogue in this area, was softened somewhat by the chairman of the Republic of Korea Joint Chiefs of Staff Li Yan-ho. Visiting Moscow at that very time, the high South Korean military leader noted that the colonel's statement did not necessarily reflect the opinion of the country's defense minister or the government as a whole. But it was the civilian government, the political leaders, the general emphasized, who had to make the decision of what to buy from whom and how many.

In general no problems have arisen here so far. Governments have changed and the South Korean domestic and foreign policy has eased up and then become stricter again, but the country's armed forces have with unwavering consistency purchased weapons systems produced in America. It is no wonder that in this situation experts in the area of international arms trade have developed a strong suspicion (and, it seems, fairly close to the truth) that pressure from Washington has played its role this time as well.

Indeed the MIG-29 could give some real competition to the American F-16M, a batch of which will be assembled and then they will be produced under license at enterprises of the Samsung Concern, and the S-300 has quite good chances of "cutting off the road (or, in this case, cutting off the runway)" of the American Patriot. And it is already quite obvious that the new Russian combat helicopters, say, the Ka-38 and Ka-50, in terms of their tactical-technical specifications, are in a class above the models produced in Western Europe which are unspecified in Korean military circles but have been studied attentively recently by the Seoul military as an object of possible purchase.

And how do they rate the level of the systems produced in Russia which have been specified? General Li Yan-ho stated that military specialists of his country...did not have a chance to study these weapons. (They said there was a MIG-29 somewhere in Romania but when the Seoul pilots tried to fly it the North Korean government sent a strong protest the Romanians and these attempts were halted.) Frankly, it does not sound very convincing. Russia regularly exhibits the advanced achievements of designers and production workers of the military-industrial complex at all large international and national exhibitions and fairs. Ultimately workers of the military attache's office are regularly invited to all demonstrations and shows of combat equipment produced in our country. The times are different from what they were five or 10 years ago. The references to the idea that North Korea, a potential enemy, is armed with similar systems did not sound very convincing either. After all, the FRG Air Force kept using the MIG's from the GDR.

So the explanations from the South Korean military leader look more like an attempt to shift the blame for the lack of desire to develop cooperation away from the military. General Li gives one to understand that the army's hands are tied. Tied by the lack of political decisions.

But perhaps he is partially right. Perhaps there is indeed some point in permitting potential buyers to come closer, to become more familiar with the commodity that is offered not only on the show stand but also under conditions close to real combat application? Who was that, say, in Abu-Dhabi. In response to the unvoiced request from the South Koreans we will publish **for the first time** a photograph of the Ka-50 during in its combat application.

Here you see the commodity, as they say, in the best light. [PHOTO OF KA-50 NOT REPRODUCED.]

Russian Arms Exports, Place in World Arms Market Surveyed

944D0055 MIROVAYA EKONOMIKA I MEZHDUNARODNYYE OTNOSHENIYA in Russian No 4 Apr 94 [Signed to press 21 Feb 94] and No 5 May 94 [Signed to press 29 Mar 94]

Article by Yu. Alekseyev: "Mirovaya Weapons Trade and Russia"]

[No 4 Apr 94 pp 16-22]

[Text] The changes that have taken place in the system of relations between states as a result of the disintegration of the Soviet Union and the cessation of the "cold war" made it necessary for Russia to rethink and restructure its military-political and military-economic strategy. This also involves such an important element as international trade in weapons and military hardware. Many old motives and objectives have been transformed or have lost their significance. New ones have appeared. How they can be considered in foreign policy, what policy should be pursued in deliveries of arms to other states, and how this can be accomplished without harming one's own strategic interests and socioeconomic development—these and other questions are worrying Russian and foreign specialists today. Interest in these problems has increased dramatically in connection with the curtailment of nuclear arms and the armed forces of the NATO countries and Russia, the reduction of defense production in the states that are most advanced militarily, and also in connection with the changes that are taking place in world trade in military goods and services.

The article examines the situation in the world weapons market and questions in the organization of Russian deliveries to foreign countries and analyzes different points of view on the objectives and prospects for military exports as well as some aspects of the political-legal basis for the realization and regulation of military and technical ties with the far and near abroad.

I

In the years 1987 through 1992, weapons and military hardware in the amount of about $200 billion (in 1990 prices) were sold in the world market. The USSR and then Russia, which produced and exported about 80 percent of the weapons when it was still the USSR, and the United States are the undisputed leaders in the trade with military equipment. In the period 1987-1991, the USSR and United States delivered to other countries 69 percent ($121.2 billion in 1990 prices) of the basic kinds of arms. Far behind them follows France, whose share averaged 6.4 percent ($11.2 billion) of total military deliveries. The relative share of other major exporters was: Great Britain 5.2 percent or $9 billion, PRC 4.5 percent or $7.8 billion, FRG 3.5 percent or $6.1 billion, and Italy 1.1 percent or $1.9 billion (see Table 1). The developing countries, including the PRC and Israel, exported weapons in the amount of $13.3 billion, which was equal to 7.6 percent of total world military deliveries.

Table 1. Leading Exporters of Basic Arms Systems (in millions of dollars in 1990 prices)

Exporting Country	1987	1988	1989	1990	1991	1987-1991
USSR	17.745	15.115	14.887	9.633	3.930	61.339
United States	13.691	11.867	11.969	11.234	11.195	59.957
France	3.232	2.374	2.861	1.950	804	11.220
Great Britain	2.171	1.690	2.661	1.575	999	9.097
China	2.917	1.930	929	954	1.127	7.857
FRG	784	1.309	780	1.226	2.015	6.115
Italy	539	732	225	149	172	1.858
Netherlands	317	631	459	142	208	1.758
Brazil	666	507	288	165	2	1.629
Sweden	474	585	302	103	59	1.524
Israel	408	155	382	108	119	
Other countries	2.783	2.422	2.485	1.765	1.484	10.986
Total	45.787	39.317	38.228	29.004	22.114	174.532

Source: "SIPRI Yearbook 1992: World Armaments and Disarmament," Oxford, 1992, pp 272-273.

The state of the weapons market—volumes, directions, conditions of delivery, accounting procedures, etc.—is inseparably linked with the international political and economic situation. The weapons market reacts rather sensitively—at least it has over the last decade—to processes taking place both in interstate relations and in the political and economic life of the countries that are the main importers and exporters of military goods and services. In Russia, this was manifested particularly clearly at the time of the restructuring of social and political life.

Among the tendencies and factors that influence Russia's present position in the world arms market, note should be made of the following:

1. Beginning with the second half of the 1980's, we have observed a steady decline in the volumes of world deliveries of arms. In 1989, their sales amounted to $38.2 billion, which is 20 percent less than in 1987. From 1989 through 1992, the cost indicator was halved again, amounting to $18.4 billion, that is, it declined by more than 60 percent from 1987 and 1992.

There are quite a number of reasons for the reduction of military deliveries. In the first place, the worsening of the economic position of many of the major weapons importers from developing countries, which is accompanied by a shortage of hard currency for the purchase of foreign weapons and military hardware, the cost of which is increasing steadily. Secondly, the decline in the foreign trade turnovers of oil-producing states, including because of the Iraq-Iran and Iraq-Kuwait wars, and the reduction of credits that these states granted to friendly countries for the acquisition of weapons. Thirdly, the development of own military production in an extensive group of states of the Third World—India, Egypt, Israel, South Korea, Brazil, Argentina, Taiwan, and others. Fourthly, the cessation and amelioration of many conflicts and conflict situations in Africa, Asia, and Latin America. Fifthly, the accomplishment in a number of developed and developing countries of projects for the modernization and reconstruction of old previously purchased ground, air, and naval weapon systems (in particular, in Australia, Belgium, Denmark, the FRG, Turkey, Saudi Arabia, Thailand, Venezuela, and Taiwan[1]). Sixthly, the cutting back by weapons exporters (USSR/Russia, United States, the European countries of NATO, and China) of programs for the free delivery of arms to foreign states and difficulties in the financing and extension of credit for military imports of Third-World countries.

2. There was an abrupt change in the leader in connection with the worsening of the positions of Russia in the world market for weapons. The share of the exports of the former Union, which consistently was ahead of the United States in the 1970's and 1980's in terms of the volume of deliveries, and then Russia itself declined from approximately 40 to 17 percent in 1991[2] and to 11 percent in 1992 ($2 billion in 1990 prices).[3] There are many objective circumstances behind [illegible] of this: the collapse of the Warsaw Pact and the associated cessation or reduction of programs for deliveries of arms and the transfer of military technology to the states included in this organization and also the weakening of bilateral military-technical ties with a whole group of developing countries that were large importers of Russian weapons. To a certain extent, another reason for the decline in military exports was the decision beginning 1 January 1991 to go over to payment in hard currency in foreign trade operations not only with the countries of the former Warsaw Pact but also with developing states, the arms trade with which took place, as a rule, on the basis of local currencies, and also the transition to the delivery of military equipment on a cash basis. One can get an idea of the dynamics of the latter process from Table 2.

Table 2: Conditions for the Payment of Foreign Deliveries of Russian Arms

Conditions for the Payment of Deliveries of Arms	Share of the Total Value of Deliveries (in percent)	
	1986-1990	1992 (plan)
For cash	37	78
On credit	40	22
Free or under preferential conditions	27	—
Total	100	100

Source: NEZAVISIMAYA GAZETA, 29 September 1992

It appears that the emphasis on cash deliveries for hard currency was hardly well founded. In the first place, this contradicts the practice in world trade with its extensive use of the system of credits and loans and insurance of commercial risks. (In the 1980's, the United States, for example, extended credit to foreign states for 40 to 60 percent of military production and services.[4]) Secondly, no consideration is being given to the real exchange-financial position of the buyers of our arms, most of which are developing countries without a surplus of highly liquid foreign exchange or an up-to-date system for trade accounts, where a major role is played by various kinds of compensatory deals, joint production, and cooperation. Thirdly, the shift to the use of hard currency and cash for the payment of deals under the "cash and carry" principle deprived Russian arms exports of one of its main advantages—preferential payment and low prices.

The above-named factors in combination with the changes that have taken place in recent years in the disposition on forces at the global level did much to undermine the motive of military-political and military-technical support as a reason to acquire Russian weapons and established a long-lasting and rather stable basis for the securing of Russia's relatively small share of world trade in weapons in comparison with the United States, whose share of total world exports of weapons increased from approximately 30 percent in the 1970's and 1980's to 50.6 percent in 1991. It was 44 percent in 1992.

This situation means not only the shifting of Russia to the group of European exporters in terms of the volume of military exports and a noticeable weakening of its positions in the world arms market but also, more importantly, the appearance of a monopoly seller there, whom it will be extremely difficult to catch and maybe impossible, at least in the coming decade—if anyone has such a desire. This is the reality which which Russia will have to contend in all multilateral and bilateral negotiations in the trade with weapons and disarmament and also in the practice itself of exporting military goods and services.

3. There were noticeable changes in the overall world structure for the importation of arms. Above all there was a change in the relationship of the volumes of their purchases between the developing and the industrially developed countries in favor of the latter. In the first half of the 1980's, the countries of the Third World imported 75 percent of weapons and military hardware (in terms of cost) and Western states imported 25 percent, that is, the ratio between them was 3:1. At the beginning of the 1990's, the share of developing countries in total world imports of military output fell to 56 percent and that of developed countries increased to 44 percent, which corresponds to a ratio of 1.3:1 (see Table 3). Such a shift, of course, cannot fail to affect arms deliveries. For the United States and other NATO countries, this effect is not so great and, the main thing, it does not require that they make any fundamental changes in their trade in military equipment. This affects Russia to a much greater degree. The fact is that the share of the developing countries in its exports of military goods was always high—on the order of 70 to 80 percent, whereas the remaining 20 to 30 percent went to a second group of states, primarily states of the Warsaw Pact. Moreover, in recent years we have seen an opposite

tendency in Russian military exports, toward a decline in the relative share of industrially developed states (again, the countries participating in the former Warsaw Pact) and a simultaneous increase in the share of partners from the Third World. According to information from the Russian press, the relative share of the first group of states declined to 12 percent in 1992, whereas that of the second group increased to 88 percent.[5] In this respect, Russia is second only to the PRC, whose military exports are oriented exclusively to the developing countries.

Table 3. Distribution of Imports of Basic Kinds of Arms in the World by Regions (in percent)

Regions	1983	1987	1990	1991
Near and Middle East	37.3	34.0	20.9	21.3
South Asia	7.4	14.9	14.7	16.5
Southeast Asia	7.9	8.1	9.5	13.5
Africa south of the Sahara	4.3	4.8	3.8	0.5
North Africa	5.9	3.8	2.6	—
South America	8.8	4.1	3.1	3.1
Central America	3.4	1.4	1.7	0.8
Total all developing countries	75.0	71.1	56.3	55.7
Industrially developed countries	25.0	28.9	43.7	44.3
Total	100	100	100	100

Calculated in accordance with: "SIPRI Yearbook 1988," pp 250-251; "1990," pp 250-251; "1991," pp 278-279; "1992," p 308.

4. There were shifts in the distribution of world and Russian exports of arms by regions of the developing world. The main market for sales remains the Near and Middle East. But whereas in 1983 the countries of this region absorbed 37.3 percent of world exports, their share in 1991 declined to 21.3 percent despite the tense situation in the Persian Gulf, the Iraq-Kuwait war, and the massed deliveries of military hardware to Saudi Arabia by the United States. The relative share of the South and Southeast Asia regions in total world deliveries, on the other hand, increased significantly from 1983 through 1991 as a result of vigorous economic growth in a number of large countries (Philippines, Malaysia, Thailand) and the purposeful policy of India and Pakistan to increase their military potentials: South Asia from 7.4 to 16.5 percent and Southeast Asia from 7.9 to 13.5 percent (see Table 3). During this same period, there was a sharp decline in the African and Latin American regions—from 10.2 and 12.2 to 0.5 and 3.9 percent, respectively.

II

As for the regional and country distribution of Russian exports, there was a dramatic change in the situation here. In the second half of the 1980's, more than 30 percent of Russian arms were sent to South Asia (India and Afghanistan) and about 20 percent to countries of the Near and Middle East (Iraq, Syria, Libya, and South Yemen). In terms of the volume of weapons delivered, they were followed by African states (Angola, Algeria, Ethiopia, and others) with 10 percent and the southeast region with 8 percent (see Table 4).

Table 4. Regional Structure of Russian Arms Exports, 1986-1990 (in percent)

Importing Regions	Exporting Countries						
	USSR	United States	France	Great Britain	PRC	FRG	Russia (data for 1991)
Near and Middle East	19.6	20.3	47.4	45.1	52.6	9.5	69
South Asia	29.6	2.3	13.1	17.2	21.4	8.2	17
Southeast Asia	8.2	13.8	2.7	8.5	19.8	5.6	
Africa south of the Sahara	5.7	0.5	3.4	1.3	4.0	1.9	1
North Africa	4.5	0.4	0.5	0.3	0.7	1.2	
South America	0.5	2.5	8.6	7.3	0.01	15.8	1
Central America	2.0	0.7	0.2	0.3	—	0.1	
Total exported to developing countries	70.1	40.5	76.0	80.0	98.5	42.3	88
And industrially developed countries	29.9	59.5	24.0	20.0	1.5	57.7	12
Total	100	100	100	100	100	100	100
Volume of exports to all countries of the world (millions of dollars in 1985 prices) prices)	60,753	53,716	13,716	7,714	7,673	4,726	—

Calculated in accordance with: "SIPRI Yearbook 1991," pp 208-211; NEZAVISIMAYA GAZETA, 29 September 1992.

At the beginning of the 1990's, Russia exported arms mostly to the Near and Middle East, the importance of which in Russian exports greatly increased during these years. Its share amounted to 69 percent of total military deliveries to foreign countries. About 17 percent of such deliveries went to the two Asian regions, South and Southeast Asia. Only 2 percent of the weapons were exported to the African and South American regions (see Table 4). The buyers of domestic armaments included such major contracting parties as Iraq, Libya, South Yemen, North Korea, Angola, Ethiopia, Algeria, and several other countries, whose share in 1987-1991 amounted to about 30 percent of our total world military deliveries or 40 percent of those to the Third World. Afghanistan was added to this list in 1992. If the states of the former Warsaw Pact, which together with the enumerated countries absorbed about 70 percent of the military exports of the USSR, are added to the named countries, then not only the structural crisis in the area of the geopolitical distribution of our military exports is obvious. Also apparent is a substantial disorganization of the market itself and the mechanism for the marketing of our defense output. The former bases of the deliveries, the assessments of their effectiveness, the choice of buyers, and the procedures of exports and accounting no longer correspond to the realities of today. The development of a new mechanism for the export of military output is proceeding slowly and not without difficulties of an internal and external nature.

The traditional and ideologically oriented circle of importers was narrowed so much that there remains too little space for maneuvering in the world arms market. There were dramatically diminished opportunities to affect the military-political processes in the countries of the Third World. Nathan Shamuryarira, minister of foreign affairs of Zimbabwe, notes that Moscow's political and military departure from the south of Africa (he means the settlement of the military conflict in Angola and around it) deprived the continent of a "counterweight to the influence of the United States, of an alternative political model, and also of a source of help. One hears only the dominant voice of the United States."[6]

At the same time, the assertion often heard in the Russian press that America is purposefully and directly driving Russia out of the world weapons market is hardly fair. The United States is holding on to established marketing regions and is by no means in a hurry to begin trading with those odious regimes to whom we have refused to deliver for well-known reasons. But this does not mean that there is no competition. Moreover, it is increasing as the sale of output declines. Because of the pending (beginning in fiscal year 1995) substantial cuts in the military budget, American corporations intend to increase the export of F-15 and F-16 fighters, M1 "Abrams" tanks, and M2 "Bradley" armored personnel carriers. The military transport aircraft C-130 "Hercules," the naval patrol aircraft P-3, and the early detection and monitoring aircraft E3 "Sentry" are being produced for export only.[7] American military-industrial firms are striving to fill the breach that developed in connection with the unsettled state of a number of aspects of the economic and military-technical relations of India with Russia and other members of the CIS. Also moving in this direction were the East European countries that just recently were receiving an abundance of Soviet weapons as members of the Warsaw Pact.

European military firms, for their part, are squeezing their American competitors in the Near and Middle East, in South Asia, and in South America and are striving to assert themselves as the main exporters of certain kinds of military hardware. They dominate in deliveries of light fighters, jet transport aircraft, short-range missiles of the "surface-to-air" type, diesel submarines, and surface warships (destroyers, antisubmarine patrol ships, and fast patrol boats) to the Third World. The share of the European Community in the world arms market amounted to 18 percent in 1987-1991. It reached 26 percent in 1992.[8]

The military exports of the FRG have been increasing rapidly since the end of 1980's. Its share in the world arms trade increased from 1.7 percent in 1987 to 9.1 percent in 1991 (see Table 1), primarily on account of deliveries of naval hardware to India, Argentina, Portugal, Poland and Singapore and the selling off of former Soviet weapons in the arsenal of the army of the GDR that was subsequently turned over to the FRG. They included, in particular, more than 2,000 tanks, about 6,000 armored personnel carriers, 700 aircraft, 2,000 artillery systems, and 59 warships.[9] The sale of these weapons, although in small quantities but to a rather large number of countries (Belgium, the Netherlands, Finland, Israel, Spain, Hungary, Poland, Egypt, and others), man also influence the sale of Russian military hardware and it appears that it will not be in the best way. The buyers that themselves are exporting military equipment are getting the opportunity to assess our products critically and to consider their merits and shortcomings in the production of their own hardware. Then these countries, as a rule, fill their own arsenals at a lower price than through deliveries from Russia and sometimes at no cost on the basis of agreements in the scope of NATO, which naturally affects the prospects for the sale of Russian armaments.

In addition, new exporters are appearing in the weapons market: China, Brazil, and Thailand. After many years of rigid American control over its defense policy, Japan is also preparing to join the club of arms merchants.

Thus, as a result of the disintegration of the USSR and the related changes, there has been a drastic worsening of Russia's positions in the world arms market, which in turn has an effect on the geopolitical, military, and other aspects of its international situation. Of interest in this connection are those approaches to the export of weapons and military hardware that have been manifested in Russia and about which there is now sharp discussion.

[No 5 May 94 pp 38-48]

[Text] Initially the question arises: Is there really a need to trade in arms? Is this not an immoral business? Of course from the point of view of the moral ideal and humanitarian values it is immoral and even very much so to create the means of coercion and destruction of human lives and to trade in them. And one could agree with this without reservation if the relations between the members of the world community were organized on ideal principles. But in real life, alas, somewhat different rules are in effect. The entire history of mankind is

steeped in violence and the striving of one individual to subjugate another to his own interests. The moral appeal to nonviolence, to the renunciation of the creation of the means of coercion and armed combat, and to the complete cessation of trading in them must be our long-term goal but unfortunately there is no real basis for its realization at this time. The use of force and the possession of the tools for its realization are inherent in public life and cannot easily be excluded from relations between states. At the present time, it can only be a matter of giving coercion and the means and methods of its use civilized and socially acceptable forms.[10]

In specifying what has been said as applied to world practice in trade with weapons, it is necessary to stress that a qualitatively new military and political situation developed in the 1990's. There is no immediate threat of the unleashing of a large-scale nuclear war. There is little probability of aggression against Russia with extensive use of conventional arms and tactical nuclear weapons. It has become less necessary to establish and utilize military power as a means to achieve foreign-policy objectives. But the need of states for arms of domestic and foreign origin has by no means disappeared and in some cases it has even increased. It is necessary to maintain internal order, guard the borders, and protect the territorial integrity of the state. There continue to be factors of military danger caused by the increasing military potential of some regimes and their striving to utilize the armored fist to resolve disputed international questions. This is clearly manifested in regions of the Third World. Accordingly, the new situation in the world limits but by no means precludes the need for military equipment. As long as force has not been elminated from public practice and as long as hot spots and zones of tension remain, then questions of the morality or immorality of the sale of weapons will unfortunately not go beyond the scope of theoretical discussions. But since it can be said that in the short term the world is doomed to trade in arms, then it is hardly reasonable to renounce participation in it completely. It is another matter how to do this, what objectives to pursue, what limits to set for oneself, how not to contribute to the kindling of bloody conflicts and simultaneously to maintain one's own interests, and how to subject this trade to the strategy of developing one's own country.

In Russia, there are quite varied points of view on these questions. Let us look into them.

I

Still tenacious are the old views on military policy, the military-industrial complex, and the closely related tendency toward the use of force to resolve international disputes and conflicts, including with the help of arms deliveries. This tendency, as Marshal Ye. Shaposhnikov notes, is getting its "second wind" in connection with attempts by the West to transform the bipolar world into a monopolar military-political space.[11] The arms race has not yet been stopped and the sale of weapons and existence of the military-industrial complex are still based on the factor of political and corporative advantage. The reasons for this approach, in particular, are found in the following. In the first place, the conversion of Russian enterprises from military to civilian production turned out to be an extremely difficult task and its real scope is still not large. Secondly, the reduction of the army is leading to huge stocks of excess weapons, most of which are obsolete under European standards but are quite suitable for use in the Third World. Thirdly, the sale of these and other weapons can provide for the receipt of hard currency that Russia urgently needs. Fourthly, we are seeing obvious inertia in the thinking and behavior of a certain part of military and military-industrial circles and an unwillingness to give up privileges and authority. They continue to be the mouthpiece of traditional military interests, including large expenditures for defense needs, heavy reliance on strategic nuclear forces, emphasis on so-called new technologies and extensive military-technical ties with foreign states, and not, of course, conversion of military production. For many Russian nationalists, military power and trade with weapons is a symbol and instrument of a "great empire" and that power that could evoke the respect, if not the fear, of the West. They see the demilitarization of the economy and the reduction of military exports for the sake of economic recovery as "harmful talk." "Is it not really clear," writes one of the adherents of such views, "that we do not desire to renounce the role of a superpower and must not do so? Only irresponsible babblers who are prepared to sacrifice the military-industrial might of Russia can seek the grandeur of the country in material welfare and the prosperity of the populace.... Only those who do not understand the historical global importance of the power of Russia can dream of an abundance and diversity of goods and their saturation of the market with lower prices." "The present conversion," he continues in expounding his patriotic views, "infers expansion in the world weapons market, which naturally requires the improvement of military technologies and the expansion of military production.... Healthy competition within the military-industrial complex between work for foreign armies and for its own—it is difficult to imagine a more captivating prospect for our society.... 'Enormous tasks' await us and we will leave it to our descendants to improve the primitive civilian production."[12]

This painfully well-known rhetoric is also heard in the statements of one of the responsible workers of the Ministry of Foreign Affairs of Russia with respect to the Near and Middle East. We read: "Russia...**favors the curtailment of the arms race** in the Near East and **views its own deliveries as forced** to balance the situation in the sphere of regional security.... A measured and balanced **approach to the question of lowering military thresholds presupposes that Russia will continue to cooperate with partners in the Near East that need "arms deliveries to ensure defense sufficiency"[13] (my emphasis—Yu. A.). Is it not so that this is reminiscent of the logic in our relations with Egypt, Angola, Cuba, Nicaragua, and South Yemen—the settlement of regional problems primarily through military means and the limitation of the arms race through the delivery of weapons. Political sophistry of this kind hardly opens up new prospects.**

The adherents of a different point of view, among whom are many of the country's leaders, including B. Yeltsin, think that Russia, having renounced the ideologized approach to regional conflicts, ought to trade in weapons on a particularly commercial basis and without "hidden political motivations" with all states regardless of the

politics that they pursue.[14] It would seem that in this there is something new and even attractive in our difficult economic situation. But by no means does this idea always work. Whether it is apparent or not and sometimes against our will, the political side is present and will be present in most cases of deliveries of military equipment. Let us take a look, for example, at our military-technical ties with Iran, one of the main buyers of Russian military hardware today. A. Kozyrev has stated that the sale of weapons and nuclear components is under the condition that Teheran renounce the possession of nuclear weapons and the expansion of Islamic fundamentalism "of the extremist sort" into the Central Asian republics of the former Union and also interference in events in Tajikistan.[15] In some sense, these conditions are fair but there is something else that must be noted. Fundamentally these and similar reservations are being superimposed on the traditional practice in the accomplishment of military-technical ties. Our relations with Iran in the military area inspire fears in the West and countries of the Persian Gulf that they are leading or may lead to a change in the balance of power and are being reflected in political and other processes in the region. And there is no need to deceive ourselves by asserting that deliveries of military output may pursue only commercial objectives. This is a simplification of the problem. One must not forget that trade in weapons is one of the forms of indirect use of military power in international relations, including political, ideological, and many other aspects.

There is a widespread point of view in scientific and journalistic circles that is based on the fact that the international trade in weapons must be accompanied by regulation, self-restriction, and reduction of its volume. Many specialists in the disarmament area are in favor of our country initiating measures to reduce the trade in military equipment.[16]. Thus, the corresponding member of the Russian Academy of Sciences Yu. Yaremenko thinks that the sale of military materials may be only a temporary measure and that it is necessary to be oriented toward the strengthening of global and regional political stability and toward the prospects of curtailing strategic and conventional arms.[17]

Among those who emphasize regulation, some think that it must encompass a large number of interested countries and be based on unanimity and equality of rights.[18] But others such as Prof. S. Rogov, for example, defend the idea of having Russia receive certain privileges. "The United States," he writes, "must consider the legitimate interests of Russia and negotiate on trade in weapons and military hardware, even to the point of allocating quotas for Russia in the world market."[19] This is a tempting point of view if one considers our difficulties with the sale of military production. In our view, however, it has more minuses than pluses. Above all this is something that other states might demand and this would lead to a unique division of the world into spheres of influence of arms exporters and to a strengthening of the role of military business in international life. In addition, it strengthens the leading role and influence of the United States in the world arms trade. And finally, questions of regulation would sink in endless and very difficult negotiations on quantities, directions, and the time and aftereffects of deliveries, especially those to the most explosive regions.

Some see the problem of self-restriction in connection with the position of the United States and as a trump in negotiations with the United States on various questions involving military exports and regional security.[20] But in justifying self-restriction in the sale of weapons through the fact that the United States behaves in the same way and desires to make concessions to Russia, we hardly will be taking the firm course of supporting stable markets for the sale of Russian arms. And such arguments contradict the very concept of self-restriction, that is, unilateral measures as an incentive for other exporting states to follow suit.

The representatives of the military-industrial complex are widely propagandizing the idea of approaching the export of weapons and military hardware from the positions of the so-called economic conversion, which enjoys considerable support in the government and Ministry of Foreign Economic Relations. In the opinion of M. Maley, former state adviser of the Russian Federation on questions of conversion, "economic conversion is the transformation of the military-industrial complex during a transition period, when we are at the bottom economically, to an exporting branch" that would support the restructuring of the defense industry for civilian needs. The high performance of many kinds of Russian arms, he thinks, make their sale abroad very profitable. The foreign exchange receipts from this may be utilized for the development of the entire machine building branch, for the preservation of the industrial and intellectual potential of the military-industrial complex, and for the provision of the social needs of the workers in this sphere.[21] This is the point of view adhered to by M. Bazhanov, chairman of the State Committee for Conversion, the League of Defense Enterprises, and a considerable share of the directors of the defense branches, not to mention the military.

It follows from such an understanding of conversion that what is required at the enterprises of the military-industrial complex is not a radical restructuring but at best preparations for it through the improvement of their currency-financial and other positions thanks to the production of output for export. What is being proposed is essentialy not so much a reduction of military production as its changeover to export through the declining need of the Russian Army for arms, which clearly contradicts the Law of the Russian Federation "On the Conversion of the Defense Industry in the Russian Federation." And there are other aspects of concern here. More and more advanced military hardware is coming to the world market and there is increasing competition among exporters and in many cases the demands on it are greater than are customary here. In particular, [there are demands] on comfort, design, auxiliary systems, and the provision with communications. Accordingly, additional investments are required in the means of production and experimental-design and research studies. Instead of a reduction of military production, it will be further developed and the authority and influence of military-industrial circles will be preserved. To be sure, it will be under a new sign. Together with the preservation and modernization of enterprises of the military-industrial complex, the defense and militarized consciousness will be preserved and modernized. The task of demilitarization of the economy and its restructuring for civilian needs is being postponed to

the indefinite future and possibly is being eliminated. One must agree with Academician V. Avduyevskiy, chairman of the Soviet National Commission, that "those who today advocate the development of the export variant of conversion simply do not want to look into the future honestly and soberly."[22]

The concept of economic conversion based on an expansion of the role of export deliveries of arms, which are being assigned certain creative functions (preservation of the industrial and scientific-technical potential of the military-industrial complex, support for the development of machine building, etc.) is again essentially a copy of Soviet sophisms in questions of the weapons trade in the 1960's through the 1980's. In those days, as we recall, the satisfaction of the state's needs for weapons—the so-called sacrifices of aggression on the part of imperialism—was seen as one of the basic means of abating local conflicts and the arms race. Here the logic is analogous: the delivery of arms helps to limit opposition and confrontation; the military exports of enterprises undergoing conversion helps in their conversion and the changeover to civilian output.

In real life, all four of the examined points of view are interwoven, at times being reflected in the most surprising way in the practical aspects of our deliveries of weapons to foreign countries. Let us now examine the problems facing Russia in the area of trade in military equipment and how it is organized in the system of state management.

II

The system of state management of the export and import of weapons and military hardware, work and services in the area of military-technical cooperation (MTC) with foreign countries has been subjected to substantial restructuring in recent years. New management links have been established and their tasks and functions have been defined more specifically. The system of management of the MTC can be represented as being divided into six levels: the president of the Russian Federation, the government, the Commission on Military-Technical Cooperation (CMCT), the Ministry of Foreign Economic Relations, the commercial organizations for the trade in weapons and services, and the producers of arms. As of the end of 1993, the system functioned as follows.

The president makes decisions on conceptual matters and in the area of establishing or terminating MTC with foreign states.

On the recommendation of the CMCT, the government sets overall quotas and the procedures for the licensing of exports, establishes a listing of models and conditions of delivery, and gives permission to commercial, state, and other organizations to carry out export operations.

The CMCT elaborates for the government all the basic documents and proposals on the organization and management of military exports, coordinates and monitors the activities of ministries, departments, enterprises, and organizations participating in MTC, and authorizes the appropriate methodical materials. The departments included in the CMTC (Ministry of Foreign Economic Relations, the Ministry of Foreign Affairs, the Ministry of Defense, the Federal Counterintelligence Service, the Service for Foreign Intelligence, the GKI [expansion not given], and the ministries of industry, economics, and finance) provide for and monitor MTO—each in its own area—and also coordinate their actions with each other.

The Ministry for Foreign Economic Relations or, more precisely, the Main Directorate for Military-Technical Cooperation issues licenses for the export of military equipment in each separate deal, monitors the price level, prepares drafts of intergovernmental agreements on cooperation with foreign countries, negotiates, and signs these agreements on behalf of the government.

The commercial structures "Oboroneksport" and "Spetsvneshtekhnika," the Main Directorate for Collaboration and Cooperation (GUSK), the joint-stock company "Konvimeks" established on its basis, and other associations newly established in the system of the Ministry of Foreign Economic Relations deliver and repair arms, build defense plants and facilities, and organize licensed production abroad.

Such independent foreign trade organizations as "Promeksport," "Aviaeksport," "Obshchemasheksport," "Sudoeksport" and others are becoming involved more and more actively in military exports. The Ministry of Defense also intends to be engaged in the export of hardware that is being made available, having established the corresponding commercial entity "Voyentekh" in the scope of the Committee for the Social Security of Service Personnel.

Despite all the seeming logic, one is struck by the unwieldiness of the system for the organization and management of military exports. It was based on the idea of decentralization and demonopolization. But not everything is going smoothly and a number of problems are arising, the resolution of which is very difficult and sometimes leads to negative results on account of the weakness of executive authority and constant pressure from different participants in MTC. Thus, the CMTC includes the top people of the main state structures, whose interests are often antithetical. If the decisions are made taking into account the interests of each individual department, then this will be the Brezhnev practice of toothless decisions with no prospect of success. And if not, it will be very difficult to reach agreement with the CMTC. The differences will have to be settled in the government itself, which will aggravate the already complicated relations of the members of the CMTC with each other and with the government, not to mention the fact that the expeditious and prompt resolution of many questions may be simply blocked. The picture would look substantially better if there were a committee made up of independent experts to study the decisions for the government, whose actions would be guided by overall national interests regardless of the purely departmental positions of individual bodies of authority.

Relations between traders in weapons, industry, and the army are showing some tension. The former departmental specialization has practically been destroyed and the military-industrial complex is putting strong pressure on the higher levels of executive authority and the CMTC with the objective of liberalizing the arms trade. The functions of the Ministry of Foreign Economic Relations, Ministry of Defense, and industrial and various exporting organizations are frequently redundant. Under the influence of political and other motives, exceptions are made to the

general rules, which complicate the management of commercial military business. A number of producers, in particular, have been given permission to carry on independent marketing of their products and to negotiate with possible foreign contracting parties. The Tula plant, for example, was granted the right to trade in weapons independently. The president of the Russian Federation advocated giving permission to Omsk Oblast to sell a batch of tanks and aircraft engines in the foreign market.

Despite the established system for the organization of military-technical relations, a huge number of intermediaries continue to operate, most of which have no connection with the defense industry and essentially only damage our prestige. Eighteen different domestic intermediaries, who also included physical persons, announced themselves in Malaysia when it was a matter of the signing of a contract for the delivery of Mig-29's.

One gets the impression that liberalization in its present form, the unjustified expansion of the rights of a number of low-level participants in commercial military ties, and the granting of special rights to them are getting ahead of the formation of economic policy and the course of restructuring military branches of industry. The general departmental and local fight for "sovereignty" and a "piece of the pie" from the export of weapons may postpone conversion and greatly complicate the policies of Russia in the world arms market. Of course, taking into account our past excessive monopolization and secrecy bordering on a lack of control in the area of MTC, it is necessary to move in the direction of liberalization. But it must be accompanied not only by an increase in the number of participants and a simplification of bureaucratic procedures but also by unification and uniformity of the rules of trade for all subjects of MTC. This will make it possible to some degree to preclude patronage, privileges, and corruption of persons involved in military exports. Also urgent is the establishment of more flexibility in price policy and in commercial approaches to the conclusion and realization of deals. The policy of the CMTC is far from perfect in this respect.

In connection with the fact that the volume of the arms trade in 1992-93 was approximately one-third of what was planned, friction between different exporting departments and associations became even more intense, and competition did not yield positive results, once again the management of military exports was reorganized. At the end of 1993, on the basis of the specialized associations of the Ministry of Foreign Economic Relations "Spetsvneshtekhnika," "Oboroneksport," and GUSK, the state corporation "Rosvooruzheniye"[23] was established, signifying the appearance of a unified state system for trade in Russian arms.

It appears that this step is nothing more than another extreme—going from one pole to another, from boundless liberalization to rigid centralization—and is evidence that the organization of the management of the export of arms in the interests of all its participants and national needs is still far from perfect. Hopes that reorganization will yield quick results and will substantially improve our position in the world arms market in the next few years are clearly premature and there is still no real basis for them. An uncompromising centralized policy may yield some results but its overall effectiveness will not be sufficiently great and, the main thing, it will not meet the needs of the transition to market relations.

But this is only a small part of the problems that Russia has encountered in trading with weapons. There are also difficulties of a higher order that have to do with the military and foreign policy of the state. The fact is that deliveries of arms, as was already stated, are not only measures for the foreign economic exchange of goods but also, more significantly, one of the most important forms of indirect use of military power in foreign policy and of guaranteeing national security.

The initial legislative base has now been established for the development of a concept of national security. Laws "On Security" and "On Defense" have been passed, the president has approved the "Basic Positions of the Foreign Policy Concept of the Russian Federation," and a military doctrine has bee formulated. The work on the concept of national security is still far from complete. It is apparent from the materials on these questions that have appeared in the press that as yet insufficient attention is being paid to the arms trade as one of the substantial components of military doctrine and national security. Many aspects of this problem are being ignored or covered up. For Russia, after all, deliveries of arms are in many cases more significant than they are for the West. This is explained by the fact that Russia's sphere of influence has been greatly diminished on account of the reduction or extinguishment of political and military ties with a large group of states. Under the conditions of the internal economic crisis, practically the only means of preserving these ties, especially with the countries of the Third World, is the delivery of armaments and military technology. In this connection, the problems of trade in the means of armed combat must be closely linked with the concept of national security, military doctrine, and a law on a long-term state program for the equipping of the armed forces and the production of arms (which, by the way, likewise does not yet exist). These problems must be an integral part of each of the named documents and take their place in the list of tasks and means to ensure the country's security. The absence of a concept for national security and of the mentioned law and also of the corresponding independent section in the military doctrine have a negative effect on the tactics and results of military-technical cooperation with foreign countries. As for the reasons for this situation, we will note the following:

—the lack of authority in the central bodies of state administration and the absence of a consensus between the key persons of the federation on domestic and foreign policy problems;

—differences at all levels of authority and among the political forces in the understanding of Russia's place in the international system and of its new and in part greatly reduced possibilities in world politics and economics. One hindering factor is the remaining stereotype of "being a super power," the decider of the "peaceful fate" of mankind. Another is the sometimes unjustified pro-Western leaning of Russian politics and the syndromes of guilt and inaction evoked by the war in Afghanistan and the events in Tbilisi, Vilnius, etc;

—difficulties in the formulation of the sources of threats from the former Union republics and—what is particularly ticklish—from the subjects of the federation. To a considerable extent, relations with the latter are complicated by the slow progress on the way to the settlement of interethnic problems, which have become the primary threat to the territorial integrity of Russia;

—the enormous foreign-policy, financial-economic, and morale costs resulting from the defeat of the USSR in the "cold war";

—the striving of some departmental and political circles to diminish the positive changes in the military-political strategy of the United States and other NATO countries, including the reduction of their defense budgets and programs and their desire to limit the direct use of military power in foreign policy.

We will not see a workable concept for national security and state enactments in support of it until we achieve a firm and clear idea of the kind of society to which we are striving, what must be the principles for the interrelations of its subjects, what kind of environment would foster the reform of the society, what geopolitical space is subject to protection, and what means and forces are necessary and adequate for this. In so doing, in our view, the problems of deliveries of military equipment and of military-political ties ought to be made separate sections of the concept of national security itself and of the documents relating to it (military doctrine, program for the equipping of the armed forces, and others).

III

Further the question arises of how specifically is the arms trade to be realized, where and to whom should arms be delivered, and by what criteria should one be guided thereby. The choice of the contracting states must be based not on present financial or political conditions but rather on more profound and permanent considerations. It must not put Russia in an ambiguous position or involve a potential threat, as in the case of large deliveries of up-to-date hardware to Iran, whose policies in the Middle East as well as in the former republics of Central Asia largely contradict Russia's long-term foreign-policy and political interests. The announced principle of removing interstate military trade relations from the realm of ideology, the striving to sell to all those who can pay, and the pursuit of momentary profit can harm Russia itself and make us the hostages of the adventures of some regime or other that is oriented toward dictatorship of hegemony. At the same time, it is obvious that the departure of Russia from the arms market or a dramatic reduction of its deliveries would undermine our positions and the confidence of our partners, who would doubtless find other producer countries to satisfy their requirements.

In the light of the new policy of Russia, it would be quite natural also to extend the notion of defense sufficiency to those countries to which we deliver weapons and to proceed from the existence of the real threats to their security and to specify the list of items to be delivered in accordance with that.

The criteria for the assessment of the expediency of deliveries to particular countries and regions—to digress from purely situational considerations—must take into account the following basic factors:

—observance of human rights and the rights of ethnic minorities;

—adherence to peaceful means of settling disputable problems and conflicts;

—observance of the UN Charter and international agreements and respect for international law;

—prevention of the dispersion of the most dangerous kinds of weapons and the drawing of a clear line between conventional arms and weapons of mass destruction;

—support of a balance of interests (and not of power) and raising of regional stability on the basis of the lowering of the overall level of military danger;

—socioeconomic and political consequences of deliveries of military equipment for the purchasing country and for Russia and the link between these deliveries and the conversion of defense production and the tasks in the demilitarization of the economy;

—the significance of military sales for the strategic situation of Russia and for its relations with the near abroad;

—the influence of deliveries on relations with the West and also with the main political and trading partners in the Third World.

Despite the dramatic reduction of the market for the sale of Russian weapons, the difficulties of penetrating new markets, especially of developed countries, and some shortcomings of our arms (inadequate electronics, problems with servicing, and others), the situation is not all that hopeless. In the first place, a large number of countries that do not come under UN sanctions (embargoes)—Mongolia, North Korea, China, Vietnam, Laos, Algeria, Syria, India and others—possess Russian weapon systems. Secondly, Russia has acquired new consumer-countries for military equipment in the former Union republics, which are of incomparably greater strategic interest for Russia than is the West or the developing countries.

The signing of the Treaty on Collective Security by six states of the CIS and other bilateral agreements established the legal basis for military cooperation but in practice its realization is proceeding extremely slowly. The idea of establishing joint general-purpose forces and a single defense space has not yet been put into practice. The system for the elaboration and implementation of a unified nuclear policy has not been defined and the final agreements have not been set for the fulfillment of the obligations under START-1 and the Treaty on the Reduction of Conventional Arms. Nor have we been able to bring the principles for the stay of the forces of one state in the territory of another organically into the established system for joint security. The difficulties in resolving all of these questions have to do with the general political situation in the countries of the CIS, with their lack of mutual trust, and with the supersensitivity of their national self-consciousness. The formation of supranational military-political and military institutes is seen by various political forces as a threat to state sovereignty.

At the same time, the countries of the CIS are actively establishing their own national armies and are trying to resolve questions in their material-technical equipment and training of the enlisted and officer personnel. And here none of them, including Ukraine, will be able in the foreseeable future to get along without Russia with its enormous military-economic and scientific-technical potential. The Russian military industry, in turn, is interested in becoming the main supplier of arms and military hardware to these countries, whose requirements will increase with the establishment of national military structures and the expansion of their tasks. It appears that contacts will develop more rapidly in this direction than in other spheres of joint defense. Thus, on 5 July 1993, a treaty was signed between the Russian Federation and the Kyrgyz Republic on cooperation in the military area, one of the most important points of which is the preservation and development of ties for the production of weapons and complex hardware, for research and experimental design work, and for the provision of spare parts and engineering equipment.[24] Analogous documents have been signed with Kazakhstan and with Georgia. The Supreme Soviet of Belarus made the decision to join the Treaty on Collective Security of the countries of the CIS in view of the impossibility of Belarus to support its own defensive capability without close cooperation with the countries of the Commonwealth in the military and military-industrial area.[25]

Specialists in the Ministry of Machine Building, the military-industrial complex, and conversion in Ukraine think that the establishment of the production of its own finished weapon systems would be uneconomical and would take much time. In their opinion, Ukraine "cannot properly equip its own armed forces without Russia."[26]

Accordingly, it is improper to speak of a dramatic reduction of the possibilities for the sale of Russian weapons, as the press sometimes does. Of course many problems are arising with respect to the products list, tactical-technical specifications, servicing, and the conditions for the payment of arms and services delivered to the countries of the CIS. But something else is also clear. The markets of these countries may not only compensate for the loss of some odious buyers of Soviet-Russian arms but also provide for more stable, long-lasting, and more controllable markets that also remove a number of difficulties in the monitoring of deliveries on account of their geographic nearness, "information transparency," and absence of a language barrier.

* * *

Thus, contradictory tendencies can be seen in the Russian approaches to the trade in weapons and military hardware. We are observing a striving to preserve the former, although modified, practice and to maintain export volumes and also to reduce them taking into account Russia's new role in the international community and the requirements for the socioeconomic development and structural reorganization of the economy. A fundamental question arises: Restore lost positions in the world arms market or switch the potential of the military-industrial complex over to the resolution of the tasks of the national economy? But however this dilemma is resolved, it is clearly not expedient to renounce the export of military goods completely, and this is impossible taking into account the existing world practice and the reasons for such trade.

The guarantee of the correct choice of strategy and mechanisms for the arms trade is the rapid conclusion of the work on the concept of security, the specification of the military doctrine, and, in their scope, the determination of the role and place of military deliveries to foreign states as one of the means of achieving national objectives. These steps must be followed by others—the passage of a law on a long-term state program for the equipping of the armed forces and production of arms and also a radical reform of the army. The preservation of the export of weapons as a substantial component of foreign and trade policy requires much work in the area of the corresponding international norms and agreements.

Despite the assertions of officials, the position of Russia in the arms trade has not yet been fully consolidated in official documents and agreements. In our view, taking into account the degree of militarization of its economy, the role of the military-industrial complex in the economic and social life of the country, and the predominance of internal threats to security over external threats, it is expedient for Russia to take the position of limiting the sale of weapons to foreign states and to seek the same from other members of the world community. Real limitation of the international arms trade is impossible without coordinated actions by the leading exporters and importers of weapons and without the active participation of the UN in this. The elaboration of effective international mechanisms for limitation and control is an important task for progress on the way to the establishment of a new world order in which a notable role is to be played by a transformed Russia freed from the schackles of an unjustifiably high degree of militarization and predominance of military-industrial structures.

There is also much that must be done in the restructuring of the domestic practice for deliveries and it is necessary to find the optimum relationship between centralization and decentralization in the distribution of functions with respect to arms exports. On the one hand, one must not allow unnecessary redundancy and the manifestation of narrow local interests that lead to an undermining of the political and commercial positions of the state. On the other hand, it is necessary to avoid the excessively rigid centralization that was characteristic of our past, which would paralyze the initiative of developers and producers of military hardware and services for export. The improvement of the degree to which the society is informed and the strengthening of the role of legislative bodies of authority in questions of military-economic ties with foreign states could contribute to a more proper and more rapid resolution of all these problems and would make it possible to avoid many of the miscalculations and mistakes of the past.

Footnotes

1. For more details, see "SIPRI Yearbook 1991," pp 225-227.

2. In 1991, Russia exported (in units): 553 tanks, 658 armored fighting vehicles, 381 large-caliber artillery systems, 40 combat aircraft, 1 attack helicopter, 3 surface ships, 1,783 missiles, and 1 air defense complex.

3. Calculated in accordance with: "SIPRI Yearbook 1992," pp 272-273, IZVESTIYA, 25 June 1993.

4. "Foreign Military Sales, Foreign Military Construction Sales and Military Assistance Facts as of September 30, 1986." DSAA. Washington, pp 16,22, 36, 60.

5. Calculated in accordance with: NEZAVISIMAYA GAZETA, 29 September 1992.

6. KOMPAS, No 2, 1992, p 35.

7. "SIPRI Yearbook 1992," p 277.

8. Ibid., p 281; IZVESTIYA, 25 June 1993.

9. "SIPRI Yearbook 1992," p 282.

10. For more details, see N. Kosolapov, "Military Power, Coercion, Security: Contemporary Dialectics of Interrelationships" (MIROVAYA EKONOMIKA I MEZHDUNARODNAYYE OTNOSHENIYA, No 11, 1992).

11. KRASNAYA ZVEZDA, 30 September 1992.

12. NESAVISIMAYA GAZETA, 8 April 1993, p 4.

13. MEZHDUNARODNAYA ZHIZN, No 1, 1993, p 71.

14. See, for example, KOMPAS, No 66, 1992, p 27.

15. NESAVISIMAYA GAZETA, 31 March 1993.

16. PRAVDA, 18 April 1991; DIPLOMATICHESKIY VESTNIK, No 23-24, 1992, p 78.

17. SOVERSHENNO SEKRETNO, No 8, 1990, p 2.

18. MOSKOVSKIY KOMSOMOLETS, 19 April 1990; IZVESTIYA, 29 March 1991.

19. ROSSIYSKIYE VESTI, 24 April 1993.

20. CShA: EKONOMIKA, POLITIKA, IDEOLOGIYA, No 11, 1992, pp 13-21.

21. ROSSIYSKAYA GAZETA, 28 November 1992.

22. ISVESTIYA, 7 February 1990.

23. See EKONOMIKA I ZHIZH, No 5, 1994; IZVESTIYA, 1 February 1990.

24. KRASNAYA ZVEZDA, 7 July 1993.

25. KRASNAYA ZVEZDA, 17 September 1993.

26. KRASNAYA ZVEZDA, 31 August 1993.

Armaments Link With India Enters 'New Epoch'

PM0507110194 Moscow NOVAYA YEZHEDNEVNAYA GAZETA in Russian 30 Jun 94 p 2

[Article by Aleksey Bausin: "Nowadays Afanasiy Nikitin (15th-century Russian traveler to India) Would Trade in Arms with India. Prospects for Military-Technical Cooperation Between the Two Countries Being Discussed During Indian Prime Minister Narasimha Rao's Visit to Moscow"]

[Text] Just a few years ago, when the USSR still existed, Moscow and Delhi were linked by a so-called special relationship. This was expressed not just in the frequency of political contacts (a year rarely passed without a visit at the highest level) and in the particular features of bilateral trade. At that time the USSR attained strong positions in the arms market of a very large nonsocialist country where previously Western producers had held sway.

Addressing parliament in 1952, Jawaharlal Nehru, independent India's first prime minister, declared that, although India was prepared to trade with the Soviet Union and other countries which might supply weapons for the armed forces, "it would be simpler and easier for us" to buy weapons from the United States, Britain, and France. The Indian Army had indeed been built in the image and likeness of the British Army.

But in the sixties the situation changed. Encountering political pressure from developed Western countries which, apart from everything else, had begun arming India's worst enemy—Pakistan—Delhi responded to Moscow's offer to sell modern weapons. In addition, the USSR agreed to accept payment in rupees, and not in hard currency, of which India had practically none. After India's defeat in the military conflict with China in 1962 and with the active involvement of Indira Gandhi, the Indian leadership adopted the decision to create a defense potential and to modernize the infrastructure with the USSR's support.

In the end, almost three decades later, India's armed forces are equipped almost entirely with Soviet weapons. Transport and combat aircraft, air defense systems, tanks, armored personnel carriers, artillery systems, engineer equipment, a considerable number of missile-armed craft and other ships—almost all this is stamped "Made in the USSR." Moreover the Indians obtained MiG-29's, for example, earlier than some Warsaw Pact member countries. In addition, many types of hardware (MiG's, T-72's, infantry fighting vehicles, missile patrol boats, and frigates) have been made in India under license.

It is no coincidence that India became a highly active buyer of the fruits of Soviet military-technical thought, since it has highly restless neighbors. Enemy No. 1 is Pakistan, with which India has entered into armed conflicts three times. The Pakistani Air Force now has in its arsenal F-16 fighter-bombers capable of striking deep inside Indian territory: at the republic's major business and financial centers—Delhi and Bombay—and at the plants of the head company of the Indian military-industrial complex (Hindustan Aeronautics Limited) located in Bangalore (Karnataka State), and at the MiG assembly and repair lines in Maharashtra State. The Indian Air Force superiority which took decades to build up has begun to melt away. Things are no better on the ground either. Another long-standing rival of India—China—is helping to modernize the Pakistani Army. In addition, the north of India is threatened by Beijing's ballistic missiles deployed above the clouds in the high mountains of Tibet.

In such an unfriendly encirclement the strengthening of defense potential is an object of special concern to the Indian leadership. Since the Army is armed with Soviet-made hardware, the problem of getting spare parts is becoming particularly acute. It is here that serious problems have arisen.

It all started when the Russian flag was raised over the Soviet Embassy in Delhi. The breakup of the USSR symbolized not just the end of the "era of the special relationship" between the two countries. Defects appeared in the mechanism for supplying the Indian Army with spare parts, which had functioned more or less normally. Taking into account the vital need for them, this was almost a disaster for India.

"The decline which began in 1991 was caused both by Russia's grave financial position and by the destruction of cooperative ties among the former Soviet republics," Aleksandr Tytyuchenko, deputy chief of the Regional Policy Administration of the "Rosvooruzheniye" State Company, said. "Hundreds of enterprises are involved even in the creation of one aircraft. In addition, whereas our cooperation used to be built on a credit basis, the question of cash payment arose when market reforms began to be implemented in Russia. Naturally, all this came as a shock to the Indians. For almost two years not a single contract was signed."

The Russian economy's transfer to a market footing gave rise to many problems. Although the Indian side agreed to pay in cash for Russian military-industrial complex output, it refused to make payments in advance. In addition, situations frequently used to arise in which the Indians would make applications, the question would be worked out with the plants, and then the clients would strike out some points or reduce the number of products ordered. Another problem was that transactions [illegible] be conducted in the local currency—accounts were opened in rupees, which the USSR would use to buy an agreed range of goods from India. This does not now suit Russian producers, since the rupee is a partially convertible currency. But all these problems have either already been resolved or are being resolved. A number of hard-currency contracts have already been signed. It only remains to add that in 1992, despite its grave financial position, Russia allocated credit to India for arms purchases to the tune of $830 million. True, only 35 percent was taken up. So the possibility of extending it will be discussed during the prime minister's visit.

"We still see India as a reliable partner," Aleksandr Tytyuchenko said. "Both Moscow and Delhi agree that cooperation in the military-technical sphere must be expanded at least up to or even in excess of the previous volumes." The Indian side is now considering Russian offers for deliveries of a variety of armament and hardware for an amount in excess of $1.5 billion.

The new epoch, however, has brought with it not only new problems but also new prospects. For example, whereas previously military-technical cooperation mainly boiled down to deliveries of hardware and arms on the Soviet side and to the creation of the infrastructure for their operation on the Indian side, the need has now arisen to modernize the hardware which has long been in the arsenal.

Specific steps have already been taken in this area. The Mikoyan Design Bureau has won a tender for the right to modernize more than 100 MiG-21bis in a tough competitive struggle with British, French, and Israeli firms. The contract is valued at $350 million. Following the installation of guided-missile armament, new weapon-guidance systems, and modern onboard equipment, the aircraft's total combat potential operating against ground and airborne targets will increase by a factor of 7.3—which will enable it to recapture the qualities of a modern front-line fighter. The question of setting up a joint venture to produce the most important spare parts and to service the MiGs is also being examined, as well as the possibility of producing the Su-30 under license.

India and Russia have recently been getting a lot of opportunities to earn a little extra jointly out of the weapons trade. The point is that some countries in Southeast Asia (the Philippines, Thailand, Bangladesh, Indonesia) have been hinting that they would not be averse to acquiring Russian combat hardware. It was no coincidence that at last December's International Arms and Combat Hardware Exhibition in Malaysia Prime Minister Mahathir Mohamed viewed the exhibit of recent models of Russian submarines with great interest. In February of this year Suphachai Phanitchaphak, deputy prime minister of Thailand, presented the government's program to purchase modern arms by means of barter trade. At the same time he noted the possibility of importing combat hardware from Russia through third countries. All this, under conditions of Moscow's flexible approach to payment terms, makes the prospects for Russian-Indian cooperation in the sphere of joint arms servicing on the markets of third countries particularly reassuring. An agreement on military cooperation was signed between Malaysia and India back in 1993, providing for the Indians to assist in servicing the MiG-29's which Malaysia is buying from Russia. A similar form of collaboration in the acquisition of Russian arms is also attracting Thailand.

The revival of Russian-Indian military-technical cooperation would have been impossible if a certain cooling in bilateral relations had not finally ended. Relations started to get warmer in January 1993, when Boris Yeltsin visited Delhi. Then came a number of visits at a lower level, but it had already become clear that Russian foreign policy was at last turning to face Asia.

The whole complex of relations between India and Russia is still built on the coincidence of their strategic interests, which are aimed primarily at preserving their own territorial integrity and regional stability. This was precisely why, when visiting India in February of this year, Admiral F. Gromov, commander in chief of the Russian Navy, linked the problem of preserving peace in South Asia and in the Indian Ocean zone with Russia's contribution to maintaining the Indian armed forces' defense capability. In Moscow's opinion, for Russia the task of fulfilling its obligations with regard to spare parts deliveries is of a political as well as an economic nature. This is because it is precisely India that plays the role of a stabilizing factor in the region.

How reliable a partner will Moscow be in the future? The Indians are certainly asking themselves this question. Vice Premier Yuriy Yarov declared during his visit to Delhi that "India is a priority country for Russia, and we will fulfill our obligations regardless of what pressure is exerted by other states." Observers regarded these words as a warning that, whereas Russia yielded to pressure in the deal to supply cryogenic rocket engines to India, in the

future it intends to act more independently, albeit in compliance with international agreements.

After the end of the Gulf War Western arms salesmen made active use of television shots of burning Soviet-made Iraqi tanks in order to convince potential purchasers that it was best not to get involved with the Soviets. But India has used Soviet weapons highly effectively against Western models....

DEFENSE INDUSTRY AND CONVERSION

Shulunov on Consequences of RF Budgetary Policy

94UM0481A Moscow NEZAVISIMAYA GAZETA in Russian 8 Jun 94 pp 1-2

[Article by Aleksey Shulunov, president of the League of Assistance to Defense Enterprises: "To What the Government's Budgetary Strategy is Leading"]

[Text] *In 1994, Russia's aircraft plants will build only 17 combat aircraft under state orders.*

SOS!

The harsh polemics in the press and in the echelons of various power structures over the question of approving the federal budget for 1994 continue. One fundamental budget question remained unresolved—defense spending. Reformers have almost totally collapsed the country's defense industrial complex. Only a little bit remains and the financial noose will strangle it. Russia is on the brink of losing the defense industry and, in the not too distant future, its defense capability and independence.

Over the past three years, the defense industry has been delivered one blow after another. In 1992, production of arms and military equipment was reduced 67 percent. In 1993, it was planned to keep production of arms and military equipment at the 1992 level, but due to extremely insufficient and irregular financing, the state order for 1993 was adjusted downward twice. The actual volume of military production dropped 24-26 percent compared to 1992. And that was not paid. The indebtedness of the Ministry of Defense for state orders as of the end of 1993 exceeded 2.1 trillion rubles [R]. Plans for financing the development and purchases of arms and military equipment for 1994, according to the draft federal budget, will make it possible purchase arms and military equipment only at a level of 13-14 percent of the state order for 1991. The product mix of armament being produced has been sharply reduced, and all surplus, duplication, and parallelism of arms and military equipment have been eliminated: instead of 22 types of aircraft, we now produce seven; types of helicopters have gone from seven to two; surface combatants from 25 to 16; missiles from 40 types to 21, and so forth. The amount of arms and military equipment being ordered is also minimal. For example, only 20 tanks were ordered in 1992, and it is planned to manufacture 17 combat aircraft of various types by all the country's aircraft plans in 1994. This signifies a further reduction in production at defense enterprises and a complete stoppage of up to 80 percent of all production capacities. Production at virtually all the rest of the defense industry is below the level of profitability. The disaster of the Russian economy with its consequences for some reason does not frighten our reformers and their inspirers.

But after all, the problems of the defense industry are problems of 12-15 million Russian citizens, for in addition to resolving questions of the state's defense capability, the defense order is directly linked to ensuring the social and economic stability of many regions of the country. In addition to the fact that it provides a means of existence to millions of people, 9-25 percent of the funds being allocated for the defense order go toward maintaining facilities of the social sector in regions—the housing fund, kindergartens, hospitals, schools, and the like, which defense enterprises operate completely. As a result of the infrastructure of the military industrial complex that developed earlier, 33 regions of Russia account for the greatest concentration of military production, especially regions such as Novosibirsk, Nizhniy Novgorod, the Udmurt Republic, Khabarovsk Kray, Samara Oblast, Krasnoyarsk Kray, Tula, St. Petersburg, Moscow Oblast, and others. The defense order is of special importance here.

Social tension in these regions is also high. You see, workers at defense enterprises today receive wages that are 30-35 percent below the average in the machine building sector, and delays of 2-3 months in getting paid have become the norm.

Besides the social consequences, the country is being deprived of its main industrial potential. It is a question of national security and the future of Russia and its people.

It is strange that the policy of destroying the defense industry is being implemented contrary to the proclaimed decisions of the Russian Federation [RF] government. It is known that on 21 December 1993, the state order for 1994 was approved by the RF Government in the amount of the preceding year. On 19 January 1994, the basic provisions and priorities of the arms program were approved. During his trip to Tula in November 1993, the RF President approved financing expenditures for scientific research and experimental design work at a level of 10 percent of the total volume of defense spending, which was recorded by the corresponding directive of the RF President dated 20 November 1993, Pr-1736.

However, the decisions of the highest state leadership are not supported by deeds. The actual financing of the defense industry does not make it possible to control the processes of its structural reorganization, make the transition to a contract system of placing the state order, and effectively engage in conversion. In essence, the process of reforming the defense industry was transformed into a most profound crisis. The main reason for this is the insolvency of enterprises, caused by the budget-credit and tax policy of the RF Government.

Very important for the defense sector is the understanding of the prospects for further development of arms and military equipment, which is provided by a long-term arms program. Unfortunately, there also is no clarity in this matter. The arms program has been repeatedly submitted to the RF Government during the last 2-3 years, and the last time was sometime in September 1993. However, so far this document has not been approved. This also does

not give us confidence, although the Ministry of Defense, with participation of the country's leading scientists and leaders of defense enterprises, developed a precise system of military-technical policy priorities. There is an urgent need to develop a long-range program of re-equipping the Russian Army—a program whose main direction is to create high-precision weapons and modern means for rapid movement of troops. However, it is not possible to finance even the minimum necessary amount of work in this direction; internal reserves have been totally exhausted. The Ministry of Finance is also not fulfilling even its own budgetary plans. According to the results of the first quarter, the Ministry of Defense was financed at a level of only 3.5 percent of gross domestic product [GDP] instead of the planned 5 percent level.

The main argument for reducing defense spending, including for the state defense order, is the level of spending for these purposes in developed states that is no more than 5 percent of GDP. But for some reason they do not compare the volumes of GDP being produced, the need for structural reorganization of the defense industry, and the tasks facing the armed forces.

Such an approach is categorically unacceptable; it is mechanistic and too abstract with respect to the tasks facing Russia. In the Soviet Union, according to the estimate of authoritative experts, defense spending was 35-40 percent of GDP. This, of course, was a backbreaking and heavy burden. Now, there is another extreme—we risk destroying the basis of Russia's security and sovereignty.

The RF Government and State Duma must, in its entirety and with full understanding, realize the entire responsibility that they assume and take into account the above circumstances in making decisions on the 1994 budget. Understanding that the time will soon come for personal responsibility for the decisions being made, the members of the working group for examining defense spending—deputies of the State Duma—proposed making an amendment to the Law on the Federal Budget for 1994 (Article 15, Section V), having set expenditures for national defense at R55,000 billion instead of R37,126 billion, which corresponds to the level of actual expenditures of the Ministry of Defense for the first quarter of 1994, which were R6,914 billion counting indebtedness (indebtedness was R2,159 billion as of 1 January 1994 and R4,424 as of 1 April 1994). Increasing defense spending by R18 trillion corresponds to the annual expenditures at the level of the first quarter of this year.

Unfortunately, this amendment was rejected by the State Duma. But the time for final decisions has not yet come. Failure to take steps for positive resolution of the problems of the defense complex will significantly complicate the country's social and economic situation and lead to placing not only economic, as was the case before, but also political demands on the labor collectives of enterprises.

Plant's Successful Conversion Viewed

944F0863A Novosibirsk SIBIRSKAYA GAZETA in Russian No 24, 24-30 Jun 94 p 2

["Own information": "Defense Industry Will Not Die If It Manufactures... Incubators"]

[Text] **The Novosibirsk Sever production association—a pillar of the national atomic industry—is for the second time in the past six months inviting journalists for a presentation for the launch of new consumer products.**

And this at a time, we would note, when other plants of the military-industrial complex, shutting down as a result of a lack of outside orders, are taking people to mass meetings and protest demonstrations.

Unique burners for electric ranges (90-percent efficiency!) and domestic incubators (100-percent yield of chicks!), a set of window accessories (no gaps, no sound, no dust!), and 50 types of diverse laser instruments with a sphere of application from medicine to optical communications have been offered for the press' attention on this occasion. Journalists spent a long time in practical discussion of the merits and originality of instruments of automotive technology: transistor switches, ignition coils, and steering relays; explanations of a treatment method by ultrasound with an Ultratron 2-AMP instrument were received with interest.

"You think that all this will fly?" the journalists meaningfully asked Aleksey Gorb, general director of the Sever. "Yes," Gorb answered confidently, "if there are investors and partners just as desirous of creating the conditions for their own survival."

...The bus drove the journalists, in a boisterous mood following a reception, past several rows of wire entanglements. Behind which were left shops inaccessible to the press, in which, as before, Russia's "nuclear shield" is being forged, and a modest incubator guaranteeing life for each shell-confined chick....

Concern Over Privatization of Petersburg's Defense Plants

944E0956B NOVAYA YEZHEDNEVNAYA GAZETA in Russian 16 Jun 94 p 2

[Article by Yekaterina Kalinicheva, under rubric "Shares": "But Krasnyy Oktyabr Is Behind: Who Will Buy the Defense Industry in St. Petersburg?"]

[Text] **The end of May was marked by a big holiday in the ranks of the privatizers—twelve enterprises in the St. Petersburg's defense complex were put up for interregional auctions by check. The festive commotion and propaganda uproar with regard to this matter were unbelievable. Our country was showing the entire world its great love of peace. For foreigners there is no greater joy than the privatization of plants that forged the victory in all the wars, including ones that have not yet occurred. But that joy, with graying hairs at the temples, will greatly concern those who at one time linked their fate with the vast defense complex. We should emphasize immediately that the directors of the defense industries do not have anything against their privatization. In and of itself, privatization will not worsen the status of those enterprises. That status has not been so bright since the early days when the defense complex arose. Now that suppliers have stopped buying the output produced by those enterprises, the best way out of this dead end is to change the status of the enterprises and to begin manipulating their assets, selling this, leasing that, and looking for good investors. But one can still sense people's state of agitation.**

The fact of the matter is that no one knows who the purchaser of the defense industry will be and what goals he will pursue by purchasing in exchange for vouchers a nice block of shares from famous enterprises. For the time being, this purchaser is not even in sight. The organization that is engaging in the sale of shares in the defense industry in St. Petersburg, on instructions from the city's Property Fund, is the currency exchange's settlement and depositary center. That center is selling shares only to legal entities, so to speak, in exchange for noncash vouchers. However, in the words of its manager, Mikhail Osnevskiy, so far not a single request for the purchase of shares in the defense enterprises has been sold. Investment companies and check-type investment foundations are in no particular hurry. But the seller knows that at the last moment a purchaser will definitely appear. And there is a probability that, with the absence of the stock-jobbing that accompanied only the sale of shares of the well-known St. Petersburg LOMO, the purchaser of the defense industry can acquire it in exchange for an extremely small package of vouchers. The block of shares being offered is very substantial—29 percent. Naturally the directors of the defense enterprises suspect that they will be bought at a ridiculously low price with the purpose of reselling the real estate. The directors of the defense enterprises put a very high evaluation on their technological schemes and truly love their traditional output. Therefore they take a hostile attitude toward those who are indifferent to what they engage in. In response to the natural question as to whether the defense enterprise directors themselves are planning to buy the blocks of shares that have been put up for auction, they have answered that they definitely do not have the funds to do so. Anatoliy Nikolayevich Fomichev, director of Krasnyy Oktyabr [Red October], the largest of the plants that are being put up for auction, discusses with well-founded sorrow what his enterprise expects in the near future.

This enterprise does not consider itself to be bankrupt, since the state is guilty of the enterprise's debts. The Ministry of Defense owes Krasnyy Oktyabr 4 billion rubles. But the plant cannot go out independently into the free market with its excellent output, that everyone needs. Currently Krasnyy Oktyabr, which used to make and which continues to make, except in smaller volumes, the basic parts for military helicopters, has been converted to making motor units. It took a few years to begin producing them. During those years, bowing to the loud outcry, "Give equipment to the farmers!", the defense enterprises began producing motor units in all the cities and villages. The profitability rate is only 5 percent. Last year a motor unit cost 62,000 rubles. This year one costs 497,000. Of that amount, 96,000 is for wages. The entire increase in cost goes to pay for the energy resources and the material expenses. "If the prices go up again, we'll have to stop production. Because the motor unit is a product not for those who ride a Mercedes, but for those who ride the suburban electric train."

Consumers of the motor units are like wild animals of an unknown species. When it was suggested to the managers of the defense plant that they produce them as conversion items, they obviously did not carry out any marketing research concerning who would need them. They are, of course, not farmers. Because for them, plowing on a *motoblok* is like plowing on a flea [*blokha*—play on words]. The people most likely to use them are *dacha* owners. But even they dig up their six hundredths by a shovel. Therefore the motor unit is, in essence, a risky undertaking. A motor unit is a luxury. Who ever forced the defense plants to produce them? Nevertheless, in one year there was a 250-percent increase in the conversion production. How much of that percentage represents items that were bought is never mentioned.

Updated MiG-21 Series Profiled

PM2406150594 Moscow KRASNAYA ZVEZDA in Russian 18 Jun 94 p 6

[Unattributed abridged version of an article "to be featured in one of the journals published by the 'Menkh' international publishing group": "MiG-21's Second Lease of Life"]

[Text] The MiG-21 is one of the world's best fighters. It was developed by the A.I. Mikoyan Design Bureau. From the late fifties through the mid-seventies more than 12,000 of these aircraft were built. The MiG-21 was also license-produced in a number of foreign countries, including India. And the F-7—a copy of the MiG-21—is still being built in China.

More than 5,500 fighters from the MiG family—including the MiG-21—are currently being operated in more than 40 countries outside the CIS. This veteran aircraft has a long service life, and specialists estimate that it could be operated for 30-32 years—that is, right up to 2005-2015.

As for the MiG-21's "innards"—its avionics, weapons systems, and so forth—they were developed in the late fifties and early sixties, are essentially first-generation onboard systems, and, naturally, are far inferior to their modern counterparts in terms of their capabilities.

Making use of the experience of utilizing new equipment and weaponry on aircraft such as the MiG-29, MiG-29S, and MiG-29M, the "MiG" Aviation Science and Production Complex has drawn up a program to radically modernize the aircraft of the MiG-21 family. An experimental example of a modernized MiG-21 bis fighter (the project is known as the MiG-21-93) has already been developed and displayed at shows in Bangalore (India) in December 1993 and in Berlin this May, and it will be on show at Farnborough in September. Project work has also been done on the MiG-21M and MiG-21MF aircraft.

The main difference between the MiG-21-93 and the MiG-21 bis is that the avionics and armaments have been almost completely replaced. The aircraft has been fitted with a modern weapons control system, including the "Kopye" radar, a dual-redundant central computer, a head-up display, a helmet-mounted target designator, a multifunction electronic display, a registration system, new navigation and communications systems, a digital airborne signal system, and other equipment. It is important to note that, at the customer's request, the range of equipment on offer can be expanded—not least by installing units produced in the owner's home country, as well as Western equipment.

The arms upgrade program envisages the installation of air-to-air missiles. Specifically, the RVV-AYE (with a performance equal to the AMRAAM), the R-27TE and R-27RE medium-range missiles (the main weapon used by

the MiG-29 and Su-27), and the R-73E (the most effective of the close combat missiles currently available in the world). For operations against ground targets the MiG-21-93 can use the supersonic Kh-31 missile in its "air-to-radar station" ["vozdukh-RLS"] and air-to-ship variants, the Kh-25MP missile to attack ground radar stations, the KAB-500KR self-correcting bomb, an inbuilt twin-barrel GSH-23 23-mm cannon, S-5, S-8, S-13, and S-24 rockets, and other weapons, including Western-produced weapons.

The "Kopye" radar detects airborne targets both in clear space and against background clutter and in the forward and rear hemispheres, controls the use of all air-to-air missiles, automatically highlights the most dangerous targets, and detects large and medium-sized maritime targets as small as a "missile cutter" as well as low-contrast land-based targets.

Unlike its predecessor, the MiG-21-93 is capable of successfully carrying out the mission of all-weather day/night long-range missile combat irrespective of whether the target is in free space or hidden by ground clutter, engaging two targets, ensuring all-weather day/night detection of maritime and radar-emitting targets and the use of precision weaponry, and so forth.

Analysis of its combat effectiveness in work with airborne targets, for instance, shows that, as a result of the upgrade, the MiG-21-93's combat effectiveness is an eightfold improvement and comparable to that of the F-16C and Mirage-2000-5, and a fourfold improvement for ground targets.

Also of considerable importance is the fact that the MiG-21 upgrade's weapons load and equipment fit has been optimized for cost-effectiveness.

It is no secret that a number of foreign firms have been working on modernizing MiG-21 family aircraft without coordinating the projects with the "MiG" Aviation Science and Production Complex, and Israel's IAI even showed a mockup of the aircraft at the 1993 Le Bourget show in the static display. Of course, the aircraft's owners have the right to do the work, but they should not forget that neither the "MiG" Aviation Science and Production Complex nor the manufacturer will be responsible for the materials, for confirming the aircraft's certification, or for the technology used to carry out repair work. Not to mention the fact that the MiG modernization will be substantially more expensive and of inferior quality without the participation of the "MiG" Aviation Science and Production Complex.

MiG Firm 'Not Forgetting' Military Role

PM2406142594 Moscow KRASNAYA ZVEZDA in Russian 18 Jun 94 p 6

[Unattributed interview with R.A. Belyakov, head of the Mikoyan Design Bureau; date and place not given: "Academician Rostislav Belyakov: We Know How To Make More Than Just Fine Fighter Planes"—first two paragraphs are introduction]

[Text] Rostislav Apollosovich Belyakov was born in 1919. He began work in the Mikoyan Design Bureau in 1941, while still working on his thesis at the Moscow Aviation Institute. Here, in the experimental design bureau, he went through all the stages of an engineering career from rank-and-file designer to leader of the "MiG" Aviation Scientific and Production Complex. He took part in the design of virtually all the aircraft in the MiG family. The highly sophisticated MiG-29 and MiG-31 complexes and their modifications were developed under his leadership, and work is being carried out on the MiG-AT trainer aircraft, the multirole MiG-110 aircraft programs, and other projects.

He is a doctor of technical sciences, a full member of the Russian Academy of Sciences, twice a Hero of Socialist Labor, and a winner of the Lenin and State Prizes.

[KRASNAYA ZVEZDA] Rostislav Apollosovich, the design bureau which you head has designed combat fighter planes throughout its history. In recent years, in connection with the sharp—to be more exact, wholesale—reduction in the defense order, you have had to engage in more than just military programs. And, to judge by the "MiG" Aviation Scientific and Production Complex' latest design projects, conversion has not caught you off guard.

[Belyakov] Yes, we know how to make more than just good fighter planes. Today the firm's portfolio contains 18 projects for civil aircraft. Including a whole family of business aircraft—among them the supersonic 701P and the MiG-110 passenger and freight aircraft, the MiG-AT trainer aircraft, an air-cushion vehicle, and several others.

The most far advanced program is the MiG-AT trainer. This plane was developed in competition with the Yakovlev firm. The competition is not over yet, but we believe that our aircraft has a number of indisputable advantages over the Yak-130. It meets the requirements of the technical assignment almost 100 percent.

The MiG-AT's main advantage is its combination of moderate engine thrust with high aerodynamic quality, which has enabled us to reduce its weight to a minimum and consequently also to minimize the cost of producing and operating the aircraft and therefore the cost of pilot training.

We intend to show our first aircraft at the international air show at Le Bourget in 1995. As of now a model of the aircraft has been built, the blueprint has been patented, and detailed project work is being carried out. The MiG-AT will go into serial production at the Moscow Aviation Production Association.

In parallel with the MiG-AT program our design bureau is actively engaged in the design of the multi-functional MiG-100 passenger and freight aircraft. The construction of the flight prototype of this aircraft is planned for late 1995-early 1996. It will be series-produced at Nizhniy Novgorod's "Sokol" Aviation Construction Plant.

[KRASNAYA ZVEZDA] The aircraft of which you speak are undoubtedly very necessary. But it could happen that the state will not find the money even for them. How do you rate the export potential of these aircraft? It is no secret that the majority of defense firms today link their future with access to the world market.

[Belyakov] We are no exception in this respect. Incidentally, both the MiG-AT and the MiG-100 are being developed in two versions—one for the Russian market and one for export. The export machines will be equipped with engines and avionics from leading Western firms.

We are working on the "Super-7" fighter project in conjunction with the Chinese Catic firm. This aircraft is fundamentally different from the F-7 (the Chinese version of the MiG-21) in current production. It will be fitted with a MiG-29 engine, a new wing, and lateral air-intake ducts.

The modernization program for the MiG-21 fighter, the leading project for which is a Russian-Indian project, could prove a striking example of international cooperation.

Circumstances have forced us to engage more solidly in advertising. From 1988 onward, when we first showed the whole world the MiG-29 fighter at Farnborough, our aircraft have been taking part in virtually all major air shows and exhibitions. The Russian and foreign press regularly report on the firm and its new projects. Especially magazines published by the "Menkh" [as transliterated] international publishing group.

In the interests of developing foreign economic activity we have set up a special department in the firm and formed a number of joint ventures—"MiG-Sevis," "Zenit," "Ikar-Invest," and others.

Today we are experiencing real returns from all this work. Incidentally, we invest some of the funds generated from foreign economic activity in defense programs.

[KRASNAYA ZVEZDA] In an interview with KRASNAYA ZVEZDA you said that, if you were forbidden to build combat aircraft, you would still make them according to need and demand. To judge by your words, you do not intend to change this viewpoint.

[Belyakov] Of course not. Because I am convinced that Russia needs modern aircraft. And this is why, despite meager funding, we are continuing work on military programs. This primarily means the MiG-29M and the MiG-31M. Unlike other fighters being developed today, these machines could be commissioned before the end of the century, since we already have the principal results from them, and there is no risk in launching their series production.

We are also working on a new-generation fighter. We hope that we will be able to put it into the air next year. In short, while engaged in conversion programs, we are not forgetting our main task—combat aircraft.

DOCTRINAL ISSUES

Analysis of Airland Battle (Future)

94UM0466A Moscow VOYENNYY VESTNIK in Russian No 2, Feb 1994 (signed to press 24 Jan 94) pp 75-79

[Article by Lt Col V. Buryakov and Maj V. Trushin: "Airland Battle Future (According to Foreign Press Materials)"]

[Text] In the early 1980's, the United States adopted the Airland Battle concept, developed with reference to operations by an army corps and the large units included in it. This was preceded by a comprehensive discussion of it. They examined not only the fundamentals, preparation and conduct of the operation but also questions of command and control, support, the role and methods of employing the combat arms participating in it, the feasibility of changing their table of establishment, and combat training. After analysis of critical remarks and proposals, appropriate corrections and additions were made to the guiding documents, and the Airland Operation got a start in life.

Today, the United States is actively discussing a new concept, originally called Airland Battle Future*. What brought about its appearance and why was the existing concept no longer satisfactory? It is most likely that American military experts in the near future foresee cardinal changes in the "battlefield" caused by a number of factors.

First, by the emerging trends toward reducing the numerical strength of the armed forces in accordance with international treaties. Second, by the increase in cost of modern models of equipment and armament and the decrease in the amount of their purchases. Third, by the increase in capabilities of reconnaissances assets, command and control assets, and weapons enabling the opposing sides to inflict damage on enemy troop dispositions from great distances and with high accuracy.

Hence, the conclusion is made that the battlefield in the future will begin to be characterized by a lower density of forces and assets and by a large spatial scope. A new form of combat operations will appear—"contact-free," "remote," "long-range" combat with the lack of a stable front line and a non-linear combat disposition. In addition, the troops of the sides will be located at a considerable distance apart, not enabling either side to inflict significant damage even with long-range weapons.

In order to win on such a "battlefield," it is necessary to change the old views and develop new methods of conducting combat operations. Such work was carried out. American experts emphasize that the Airland Battle Future is not a revolution in military affairs, but rather is an evolutionary development of a previous concept.

The essence of the Airland Battle Future lies in "deep engagement of the enemy in long-range combat and in creating favorable conditions for his defeat in close-range combat. It assumes an initial dispersal of friendly troops in order to preclude their engagement by long-range weapons. Then powerful conventional strikes are made against important enemy installations or troop disposition areas, after which, using the advantage created, units and large units quickly depart for the selected axis and defeat the opposing formations in close-range combat. Subsequently, they again disperse to restore combat effectiveness and prepare for new combat operations.

In accordance with this the Airland Battle Future concept, the army corps' area of responsibility includes the detection zone, dispersal area, and rear area (see Figure 1). The detection zone begins from the forward boundary of the dispersal area and extends toward the enemy to a line

established by the commander. Its depth is usually limited to the range of fire of weapons at his disposal and may reach 400-500 km.

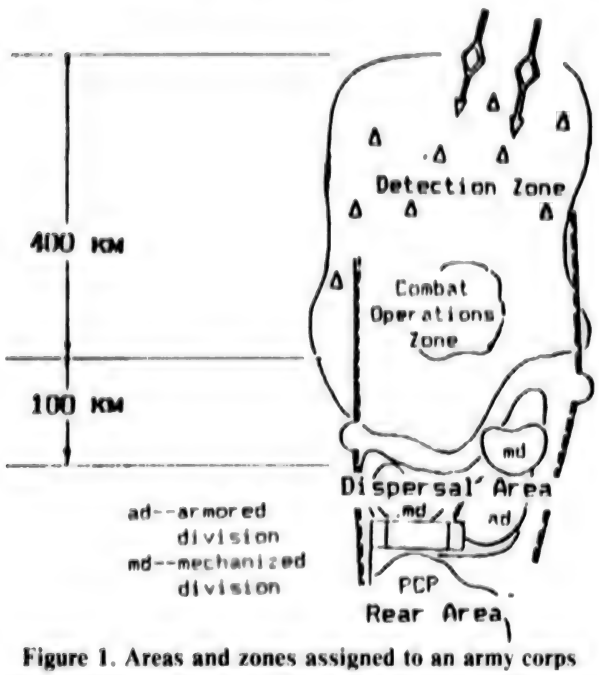


Figure 1. Areas and zones assigned to an army corps

Close surveillance of the enemy and the terrain is conducted. The task is to disclose the types, effective strength, structure, and nature of operations of enemy units and large units, their location, and directions and rate of movement. A so-called area of responsibility is designated within the detection zone; it is in this area that advancing enemy forces are defeated.

First-echelon large units and corps units are located in the army corps dispersal area. Its depth depends on the environment relief and the composition and missions of the corps. When positioning the troops, it is recommended to make full use of the protective and camouflaging properties of the terrain in order to decrease their vulnerability from enemy pressure.

The rear area is located behind the dispersal area between the rear boundary of first-echelon divisions and the rear boundary of the corps. It is occupied by the combined-arms reserve, support service units, administrative bodies, communications centers, and the army corps primary command post [PCP]. All the areas and zones are determined in accordance with the corps commander's concept.

According to views of the U.S. Army command, combat operations in the Airland Battle Future are made up of four stages. The first is detection and preparation. The second is creation of conditions for decisive combat operations. The third is decisive combat operations. The fourth is restoration of troop combat effectiveness. The duration and content of each stage depends on the specific situation.

The detection and preparation stage. The main task is to collect and accumulate information on the enemy. American experts rely on complete use of the capabilities of strategic and operational-tactical automated data collection and processing systems. All types of ground, aerial, and space reconnaissance are conducted (see Figure 2).

Special attention is devoted to using systems of reconnaissance and signaling instruments, making it possible to automatically detect, determine the location, and classify moving objects at a considerable distance. It has been noted in the press that reconnaissance forces and assets will establish not only the areas where the enemy is located but also the areas where he is not.

By the end of the stage, the corps commander develops a concept of operations. Located in the dispersal area, large units and units complete preparation for combat. Their

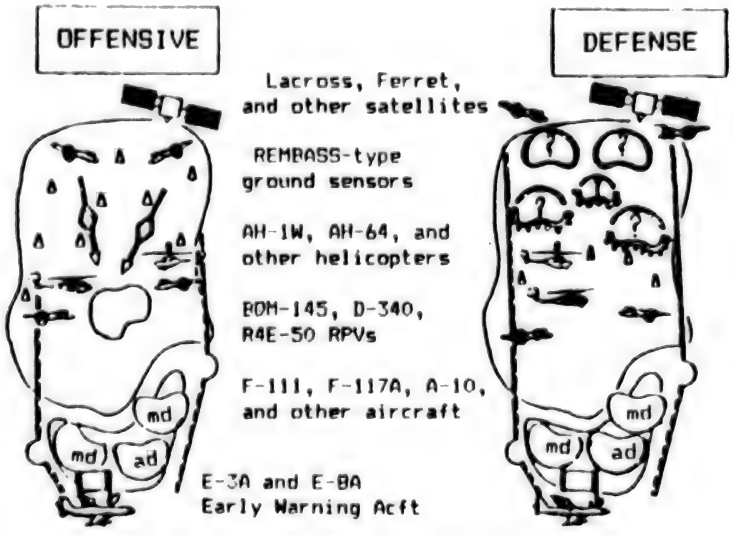


Figure 2. Detection and preparation

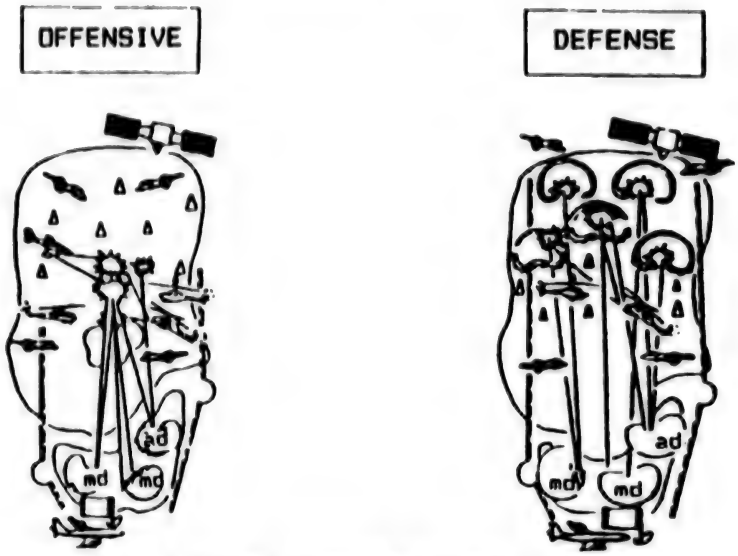


Figure 3. Creating conditions for decisive operations

staffs draw up the appropriate orders and troop movement plans. Equipment and weapons are repaired and serviced, and the necessary supplies are brought up. The areas are periodically changed. By decision of the army corps commander, some of the long-range weapons move forward under the cover of reconnaissance units and deploy to take up launch and fire positions. The most important duty of commanders during this period is to preserve troop combat effectiveness.

Creating conditions for decisive combat operations. The main content of this stage lies in engaging the enemy from great distances (long-range conventional fire), depriving enemy groupings of stability, and pinning down maneuver. It is planned to use tactical aviation, integrated reconnaissance and strike systems, reconnaissance and fire systems, remotely piloted vehicles, long-range artillery, helicopter gunships, multiple rocket launchers, and so forth (see Figure 3).

The corps commander exercises overall control of electronic and fire engagement, as a result of which the initiative is seized and the prerequisites are created for holding it throughout the operation. The best results are expected if powerful strikes are made against the most important enemy installations to decrease the combat potential of enemy troops and to disrupt command and control and weapons control systems.

Corps large units and units at this stage conclude planning, update situation data, and prepare movement routs with observance of camouflage measures. Measures are simultaneously conducted to mislead the enemy as to the real time and place of attack and maneuver. Reconnaissance units conduct reconnaissance, support long-range assets, impede enemy reconnaissance operations, and assist large units and units in organizing the advance.

American experts particularly emphasize the importance of determining the movement of achieving favorable conditions for defeating the enemy in close-range combat. In their opinion, such conditions may be: in the defense—decreasing the combat potential of opposing troops to a level that does not make it possible to continue the offensive, disrupting command and control and weapons control systems, depriving the enemy grouping of the opportunity to maneuver; in an offensive—disrupting stability of the enemy defense, disrupting his command and control systems, and prohibiting enemy reserves from approaching to close breaches that have formed.

With the start of the stage of decisive combat operations, large units and units begin moving up from the occupied areas. They strive to make full use of advantageous conditions achieved as a result of delivering conventional fires and, not allowing the enemy to recover lost positions and combat effectiveness, complete defeat of the enemy in close-range combat with attacks from unexpected axes. Success in this case depends on the maximum possible concentration of forces and assets and swiftness of advance. The following goals are pursued: demoralization of opposing forces; disruption of coordination of operations and tactical teamwork of opposing units and subunits (see Figure 4).

Divisions accomplish missions in close-range, highly fluid maneuver combat. The division commander's concept of operations calls for creating unfavorable conditions for the enemy and his subsequent rapid defeat on the move. Brigades combine the efforts of the battalions included in them and conduct combat in the interests of the brigade. In such cases they become flexible formations capable of quickly reorganizing depending on the situation. Battalions accomplish specific tactical missions, participating in brigade combat operations. They destroy the enemy in close-range combat and must be mobile, easily controlled, and able to attack on the move.

Units are ordered to avoid a frontal encounter. They are to make strikes against the enemy's flanks and rear area where he is less prepared to repel them. Combat success in

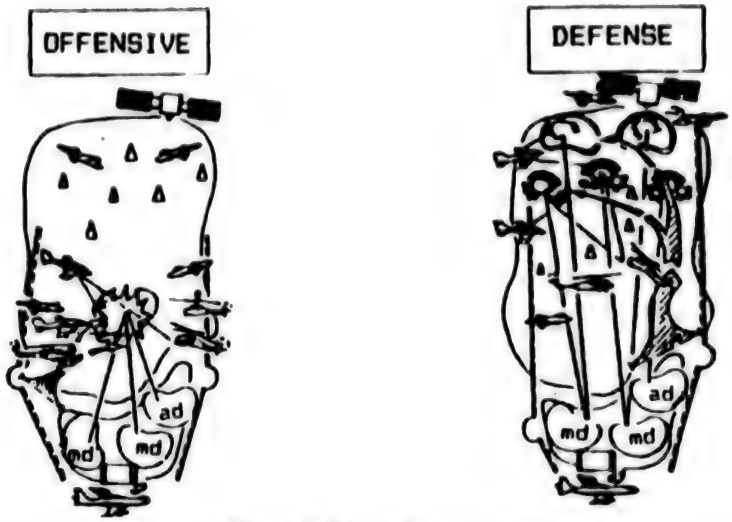


Figure 4. Decisive operations

Airland Battle Future will depend on initiative, speed, and coordination. The maneuver will become deeper, and combat will become more fluid as a whole.

Reconnaissance bodies, as has already been said, support the advance of troops to the enemy flanks and rear and also cover their own flanks and rear during the attack. During the course of combat, all commanders are granted wide initiative, independence, and opportunity to quickly derive an advantage from the situation at hand.

In the restoration stage, large units and units disperse again. By decision of the corps commander, they return to the previous areas or relocate to the front (or along it) (see Figure 5). Here measures are conducted to restore combat effectiveness and to prepare for the next operation. The troops are staffed with personnel, provided supplies; they receive new and repair damaged equipment and weapons; command and control systems are reinforced.

Changing the forms and methods of employing the armed forces in accordance with the Airland Battle Future concept required considerable attention to organizing command and control and to the functioning of the command and control system as a whole. Increasing the area from which information is gathered, increasing the number of installations being reconnoitered for their reliable engagement in "long-range" combat, the need to process data being received from space, aerial, and ground reconnaissance—all this leads to a sharp increase in the volume of information. The spatial scope and dynamic nature of combat operations entailed reducing the time for processing and transmitting the information. Therefore, today special emphasis is place on the need to implement programs aimed at improving the tables of organization and establishment of command and control systems and weapon control systems, at further developing work methods of staffs, and at improving communications equipment.

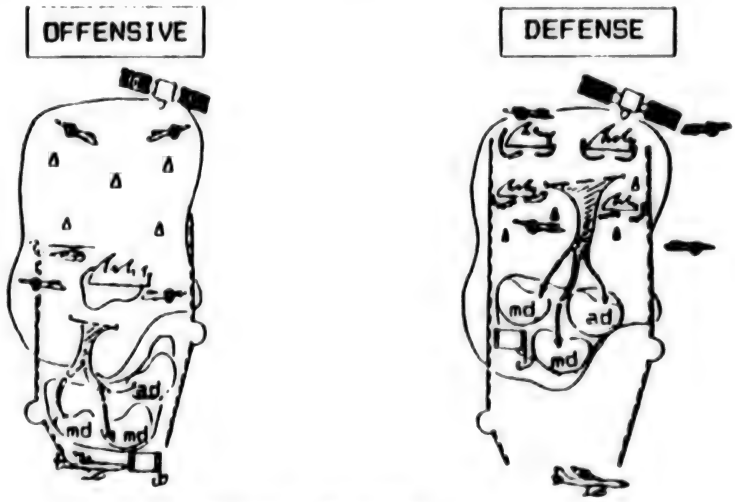


Figure 5. Restoration

Foreign experts assume significant changes in the existing procedure of logistic support. It is maintained that the existing principles and forms of its organization do not correspond to the new concept and may lead to a decrease in the combat potential of military formations. The essence of the above proposals comes down to the following.

First, a battalion should be made more mobile and fluid, eliminating concern about logistic and technical support. The battalion commander should be responsible only for the quality of vehicle maintenance conducted by crew forces. It is best to entrust everything else to brigade forward logistic subunits.

Second, the spatial scope of combat operations will bring about great efficiency in supplying battalions with fuel and lubricants, ammunition, and other supplies. Whereas before it was only delivery of conventional fires on a real-time basis that was talked about, now the question of logistic support on a real-time basis becomes critical. That is, it is now a question of feasibility of reducing the "emergence of requirement—satisfaction" cycle.

Third, it is noted that today's command and control systems provide insufficient information to the support command, which must constantly be up to date on events taking place and foresee abrupt changes during the course of combat. This will make it possible to take the necessary steps in a timely manner, change the volumes of supplies being hauled and their rates of consumption, and give guarantees that a shortage of fuel and lubricants, ammunition, and spare parts will not limit the troop combat capabilities.

In conclusion, it can be said that (as U.S. military and political circles are planning) the American Army will enter the 21st century with a new military concept. We have also tried to briefly outline its essence in this article. In our opinion, some of its tenets have already been tested in practice during the Persian Gulf War, the experience of which is being carefully studied and analyzed. Therefore, we think, the views of U.S. Army command authorities on development of advanced methods of conducting warfare are of definite interest.

Footnote

*The original name of the concept, "Airland Battle", is translated as combat, combat operations, and battle. In order to make it as close as possible to our terminology, since the concept was developed with respect to corps combat operations, we translate it as "operation (battle)."

In the early 1990's, the new "Airland Battle Future" concept was proposed, called "Airland Operation Future" [vozdushno-nazemnaya operatsiya budushchego] in the translation. Later, during the course of discussion, it began to be called "Airland Operation," which translated means "Airland Operation" [vozdushno-nazemnaya operatsiya].

Order of Battle, Capabilities of Motorized Rifle, Tank Subunits in Defense

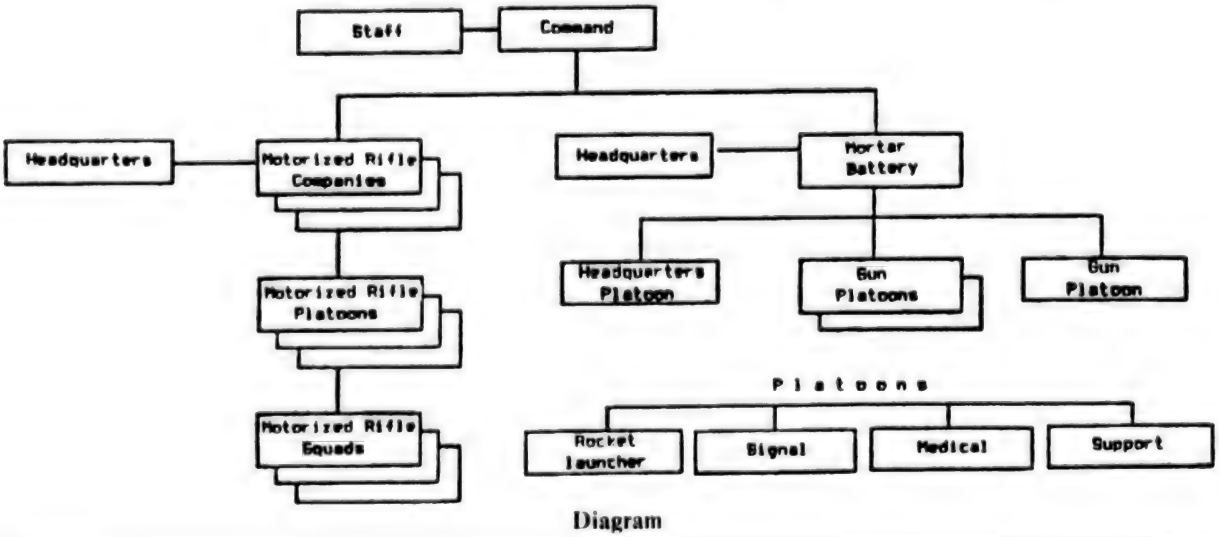
94UM0464A Moscow VOYENNYY VESTNIK in Russian No 2, Feb 1994 (signed to press 24 Jan 94) pp 32-36

[Unattributed article: "Combat Operations of Ground Forces Subunits. (Continuation*)"]

[Text] **1.3. Organization, Armament, and Combat Capabilities of Motorized Rifle and Tank Subunits in Defense**

Modern combat is conducted though the combined efforts of forces and assets of various combat arms and special troops. This is accordingly reflected in the organizational structure of motorized rifle and tank units and subunits.

A motorized rifle (tank) battalion today is the basic combined-arms subunit. Organizationally, it is part of a motorized rifle (tank) brigade (regiment). Motorized rifle (tank) subunits, taking into account the conditions of the theater of military operations and the nature of armament, have a different structure according to personnel strength and availability of armament, equipment, and attached subunits, including from other combat arms.



Diagram

Motorized rifle and tank battalions of motorized rifle and tank brigades (regiments) have the greatest "quantitative balance" in the Ground Forces. A motorized rifle battalion includes the command, staff, combat subunits, and support subunits (see diagram).

The command comprises the commander, deputy commander, deputy commander for work with personnel, deputy commander for armament, deputy for rear services, and assistant commander for artillery. The staff includes the chief of staff, deputy chief of staff, signal chief (usually the signal platoon commander), instructor, and clerk. Two infantry combat vehicles [BMP's] or two armored personnel carriers [BTR's] are intended for the command and staff.

Motorized rifle battalions on BMP's and BTR's have almost the same organizational structure and differ only in the amount of basic armament. A battalion has three motorized rifle companies, a mortar battery, and also platoons: rocket launcher, signal, medical, and support. Additionally, a motorized rifle battalion on BTR's has an antitank platoon (three SPG-9's and six Fagot ATGM's).

Motorized rifle battalions of motorized rifle and tank brigades have infantry combat vehicles. The difference between the organizational structures of these battalions from battalions on BMP's from regimental structures lies in the fact that they also include an antitank platoon (three BMP's and six Fagot ATGM's); instead of a signal platoon, there is a headquarters platoon (reconnaissance squad, headquarters squad of the chief of staff, and signal squad); and instead of a support platoon, there is a material support and maintenance platoon.

Depending on the particular features of the theater of military operations (northern areas, the south, or east), a motorized rifle battalion can also have air defense subunits, reconnaissance subunits, and an MTLB [expansion not given] or motor vehicles as a transport base. The difference in equipping battalions with BMP's or BTR's cause their difference between one another in personnel and armament strength (Table 1).

Table 1. Number of Personnel, Armament, and Combat Equipment in a Motorized Rifle Battalion and Company on Infantry Fighting Vehicles and Armored Personnel Carriers

Designation	Motorized Rifle Battalion			Motorized Rifle Company		
	on BMP's (from brigade structure)	on BMP's (from regimental structure)	on BTR's	on BMP's (from brigade structure)	on BMP's (from regimental structure)	on BTR's
Personnel	571	461	539	133	101	113
BMP (BTR)	46	37	42	14	11	11
BRM-1K	1	-	-	-	-	-
BMP-1KSh	1	1	-	-	-	-
BMP-1K (BTR-K)	1	1	2	-	-	-
82-mm-M Podnos	6	6	6	-	-	-
82-mm-M Vasilek	3	3	3	-	-	-
Fagot ATGM	6	-	6	-	-	-
SPG-9	-	-	3	-	-	-
RPG-7 (RPG-2)	32	34	34	9	9	9
AGS-17	18	6	6	-	6	-
PK (PKM) machineguns	-	9	9	-	3	3
RPK machineguns	64	27	27	21	9	9
SVD sniper rifles	9	9	36	3	3	12

A motorized rifle company on BMP's has a headquarters and three motorized rifle platoons. The headquarters includes the commander, deputy commander for work with personnel, first sergeant, senior mechanic, medical corpsman NCOIC [noncommissioned officer in charge], combat vehicle commander, two gunner-operators, a senior driver-mechanic, and a short-range radar surveillance operator. There are two BMP's in a company headquarters.

Unlike BMP's, armored personnel carriers have no weapons for combating tanks. Therefore, a motorized rifle company on BTR's includes an antitank squad. It has nine men and three Metis ATGM's. The transportation base is BTR's. The company headquarters has eight men: the commander, assistant for work with personnel, first sergeant, senior technician, medical corpsman NCOIC, senior driver, machinegunner, and short-range surveillance operator.

A motorized rifle company from brigade structures differ from a motorized rifle company on BMP's of regiments by the fact that it has a rocket launcher platoon: three 8-man rocket launcher squads, each with one BMP and two AGS-17's. A platoon has a total of 26 men, three BMP's, and six AGS-17's.

A motorized rifle platoon on BMP's has a headquarters and 8-man three motorized rifle squads (Table 2). The platoon headquarters includes the commander, deputy commander, sniper, machinegunner, gun crew member, and medic-gunner. A platoon has a total of 30 men and three BMP's.

Table 2. Number of Personnel, Armament, and Combat Equipment in a Motorized Rifle Platoon and Squad on Infantry Fighting Vehicles and Armored Personnel Carriers

Designation	Motorized Rifle Platoon			Motorized Rifle Squad		
	on BMP's (from brigade structures)	on BMP's (from regimental structures)	on BTR's	on BMP's (from brigade structures)	on BMP's (from regimental structures)	on BTR's
Personnel	32	30	32	9	8	9(8)
BMP (BTR)	3	3	3	1	1	1
RPG-7 (RPG-2)	3	3	3	1	1	1
PK machineguns	-	1	1	1	-	-
RPK machineguns	7	3	3	2	1	1
AK-74	15+3*	15+3*	15+3*	4+7*	4+1*	4(3)
SVD sniper rifles	—	1	4	-	-	1

*Assault rifles in vehicle battle stowage.

There are 32 men in a motorized rifle platoon on BTR's. Two of the squads in this platoon have nine men (one rifleman added to each) and one has eight.

A brigade structure motorized rifle platoon on BMP's has 32 motorized riflemen: five in the platoon headquarters and nine in each of the three squads.

A motorized rifle squad can have a different structure and number 8-9 men. The variant including eight motorized riflemen has: a BMP (BTR) commander, who is also the motorized rifle squad commander; a BMP (BTR) deputy commander, who is also the gunner-operator; a senior mechanic-driver (mechanic-driver); an RPG man; a rifleman-assistant RPG man; a machinegunner; a senior rifleman; and a rifleman (sniper in a platoon on BTR's). A squad has one BMP (BTR).

Tanks are the basis of tank subunits. A tank battalion, like a motorized rifle battalion, has a command and staff, three tank companies, a signal platoon, a maintenance platoon, a material support platoon, and a medical platoon. It has a total of about 150 personnel and 31 tanks. A company has three platoons, 33 men, and 10 tanks. A platoon has three tanks and nine men.

If a battalion has T-55 or T-62 tanks, the personnel strength will be greater. In tank battalions from brigade structures, the number of companies is increased (to five). The difference of such a battalion's support subunits lies in the fact that the signal platoon is replaced by a headquarters platoon. The amount of personnel and equipment in maintenance, logistic, and medical platoons has been increased to take into account the increased requirements. In all, a battalion has about 230 personnel, 51 tanks, one BMP-1, one BMP-1K, and one BRM-1K.

Defending forces engage the advancing enemy with fire. Therefore, the main indicator of the combat capabilities of a defending subunit is considered its fire capabilities. They are determined according to types of combat assets separately and in total. They are expressed by the number of objects to be engaged (targets—tanks, BMP's, infantry, and so forth).

Tanks and motorized infantry on BMP's (BTR's) comprise the basis of the combat might of a contemporary enemy's attacking forces. Consequently, a most important component part of a defending subunit's fire capabilities is its ability to engage a specific number of tanks and BMP's (BTR's) with antitank weapons and tanks.

Another component part of a defending subunit's fire capabilities is the ability to fire on attacking infantry with small arms and artillery.

The total capability of all combat assets of a subunit to deliver fire for effect predetermines its ability to repel an attack by a specific number of attacking forces and assets. Based on this, one can establish the ability to hold terrain areas (strongpoints, positions).

In order to determine a subunit's specific capabilities for engaging tanks and other armored objects in practice, one should utilize a simplified form of calculations; that is, by multiplying the number of available tanks and antitank weapons by the coefficient of their combat effectiveness (Table 2).

Table 3. Coefficients of Combat Effectiveness of Antitank Weapons for Combating Enemy Tanks and BMP's (BTR's) in a Defense

Antitank Weapons	Coefficients of Combat Effectiveness (C_{ce})	
	for tanks	for BMP's (BTR's)
Tanks	2.5	3
ATGM's on BMP's	2	3
Fagot ATGM's	2	3
Metis ATGM's	1	1.5

Table 3. Coefficients of Combat Effectiveness of Antitank Weapons for Combating Enemy Tanks and BMP's (BTR's) in a Defense (Continued)

Antitank Weapons	Coefficients of Combat Effectiveness (C_{ce})	
	for tanks	for BMP's (BTR's)
SPG-9's	1	2
RPG-7's	0.3	0.5

Note. Friendly antitank weapons are located in emplacements. Depending on the characteristics of the combat assets, the indicators of coefficients of combat effectiveness may differ from those cited in the table.

Thus, a subunit's capabilities for destroying enemy armored objects are determined according to the following formula: $N_{eo}=1xC_{ce1}+N_2xC_{ce2}+... +N_ixC_{cei}$, where N_{eo} is the number of enemy armored objects that can be destroyed; N_1, N_2, and N_3 are the number of combat assets of various types available in the subunit; C_{ce1}, C_{ce2}, and C_{cei} are the coefficients of combat effectiveness of various combat assets.

With such a calculation, a motorized rifle battalion on BMP's is able to destroy over 80 tanks (37x2+34x0.3=84) or about 130 BMP's (37x3+34x0.5=128). In addition, one should take into account the standard reinforcement of the battalion, incorporating the necessary data into the formula.

Thus, when reinforcing a battalion with a tank company and ATGM platoon (three weapons), its capabilities are increased by more than 30 tanks (10x2.5+3x2=31) or nearly 40 BMP's (10x3+3x3=39).

Consequently, a reinforced motorized rifle battalion on BMP's is able potentially to destroy 110-120 tanks or up to 170 BMP's. At the same time, one should keep in mind that during the course of combat, approximately 70 percent (0.7) of the available combat assets deliver fire against tanks and the remaining 30 percent do so against BMP's (BTR's). In this regard, it is feasible to determine the capabilities for destroying armored objects according to the formula, incorporating into it the corresponding coefficients stating more precisely the number of assets being used to destroy tanks and BMP's (BTR's): $N_{eo}=0.7(N_1xC_{ce1}+...+N_i\ xC_{cei})+0.3(N_1C_{ce1}+...+N_i\ xC_{cei}$, where the first element will show the number of tanks that can be destroyed, and the second element shows the BMP's (BTR's) that can be destroyed. In such a case, the capabilities of a reinforced motorized rifle battalion on BMP's for destroying armored objects will be about 80 tanks (0.7(37x2+34x0.3+10x2.5+3x2)) and more than 50 BMP's or BTR's (0.3(37x3+34x0.5+10x3+3x3)). The calculation of capabilities is similar for a motorized rifle battalion on BTR's.

A tank battalion, when reinforced with a motorized rifle company, is capable of destroying approximately 70 tanks (0.7(31x2.5+11x2+9x0.3)) and up to 40 BMP's or BTR's (0.3(31x3+11x3+9x0.5)).

However, one should take into account that the defending motorized rifle (tank) subunit can wage combat up to a certain level of losses (up to 40-50 percent based on experience).

Therefore, the real capabilities of battalions for destroying armored objects will be approximately 40-50 percent lower and be estimated in approximately this way: 35-40 tanks and 20-25 BMP's (BTR's) for a motorized rifle battalion. For a tank battalion it will be an average of about 30-35 tanks and up to 20 BMP's (BTR's).

But, you see, the attacking forces also wage combat usually to a certain level of losses (30-35 percent). Subsequently, as a rule, they abandon continuation of the offensive. Thus, after deciding the proportion, one can determine the number of tanks and BMP's in a formation whose attack the battalion is able to repel.

The results of calculations, taking into account the above, show that a reinforced motorized rifle battalion on BMP's can repel an offensive by a formation having about 110 tanks (36:0.3=120; 36:0.35=102) and up to 70 BMP's (22:0.3=73; 22:0.35=62). A reinforced tank battalion is able to repel an attack by an enemy numbering 110-115 tanks and 50-60 BMP's.

Based on the results obtained, a conclusion is made that a reinforced motorized rifle battalion on BMP's in defense is able to repel: an offensive by approximately three battalions—two tank and one motorized infantry—and a reinforced tank battalion; an attack by 1.5-2 (1.75) tank battalions and one motorized infantry battalion.

At critical moments of combat, the higher commander will be interested not only in the real but also the potential capabilities of subordinate formations. Such crisis situations emerge, for example, during operations by a company, platoon, or individual vehicle when disengaging from an enemy force and withdrawing—as covering-force subunits, in security at the halt, in ambushes, and so forth. In these cases, they often will have to solve a difficult problem: how to show its greatest capabilities.

Calculations show that a company has the potential to engage up to 2-2.5 battalions and force them abandon further operations; a platoon can do so against up to 1.5-2 attacking companies.

Artillery and small-arms fire is delivered against infantry. The battalion's mortar battery can destroy infantry with concentrated fire over an area 400x200 meters.

Capabilities of engaging infantry with small-arms fire are characterized by the density of rounds per minute per running meter in front of the defensive frontage. First, the width of the frontage of fire support which the subunit is to cover is determined. The following formula is used here: $W_f=F+0.5(I_1+I_2)$, where W_f is the width of the subunit's fire support frontage, in meters; F is the frontage of the defended position, in meters; I_1 and I_2 are the intervals between subunits, in meters.

Then, based on the effective rate of small-arms fire and the number of them in the subunit, the number of rounds fired by them in one minute is determined. The result obtained is divided by the width of the subunit's fire support frontage, thereby determining the density of rounds per running meter per minute.

A motorized rifle squad (platoon) can be considered the basis subunit where small-arm fire is the most important means of destroying the attacking infantry. A squad occupies a position up to 100 meters along the front, and the intervals between squads are 50 meters. Consequently, a squad's fire support frontage is about 150 meters (100+0.5(50+50)).

To calculate the density of rounds, let us take one of the variants of a BMP-mounted squad: personnel—9; armament—a BMP-1 gun (cannon), a PKT machinegun, two RPK machineguns, four AK-74 assault rifles, and one RPG-7. In this case, with a rate of fire of 250 rounds per minute for the PKT machineguns, 150 for the RPK machinegun, and 100 for the AK-74 assault rifles, the squad's small arms will fire 950 rounds per minute (1x250+2x150+4x100). With a squad fire support frontage of 150 meters, the density of rounds will be about six per minute per running meter (95:150).

The experience of defense battles during the war years shows that for reliable repelling of an attack by enemy infantry, it is necessary to create in a defense a small-arms fire density of about five rounds per meter of frontage. Such a density will entail destruction of approximately 50 percent of the attacking enemy infantry. Firing up to six rounds per minute per meter, a motorized rifle squad acquires the ability to successfully repel an infantry attack. Considering that usually up to a platoon of infantry advances on a frontage of 150-200 meters, it is logical to assert: a squad will repel an attack by these forces.

Small-arms fire capabilities are also calculated for a platoon. It is able to fire 2,900-3,000 rounds per minute. Based on a platoon's defensive frontage (up to 400 meters) and the intervals between strongpoints (300 meters), the total frontage of conducting fire will reach 700 meters (400+0.5(300+300)). The fire density in the zone will be about four rounds per minute per meter. On an extremely dangerous decisive axis, these densities will double by means of a maneuver. In addition, a BMP-mounted platoon has three guns (cannons) also intended to engage attacking infantry. A motorized rifle platoon can cooperate with a tank, which increases not only its antitank power but also the density of small-arms fire to 5-6 rounds per meter. If up to a company of infantry advance on the defensive frontage, the platoon is able to successfully repel its attack (with a density of 5-6 rounds per meter).

A battalion's (company's) capabilities for repelling attacking infantry with small-arms fire are formed, respectively, from the capabilities of first-echelon companies and platoons. With two platoons in the first echelon, a company can successfully repel the attack by up to two infantry companies on a frontage of 1.5 km. With three platoons in the first echelon, the density of rounds per meter on this frontage will increase by another 30-35 percent, which makes it possible to repel the attack of three companies.

Based on the capabilities of motorized rifle (tank) subunits for destroying tanks (BMP's, BTR's) with antitank weapons and enemy infantry with small-arms and also the standards for attack frontage of advancing subunits, it is not hard to determine the width of the defensive frontage. Thus, a motorized rifle (tank) battalion, capable of repelling an attack by two to three enemy battalions advancing on breakthrough sectors on a frontage averaging up to 1.5 km each, will successfully defend on a frontage of 3 to 4.5-5 km, depending on the nature of echelonment of enemy and friendly forces.

Similar to this, a motorized rifle (tank) company in such conditions is able to defend on a frontage of up to 1.5 km. A platoon's capabilities for destroying one company (sometimes even more, taking into account artillery fire) enable it to successfully defend a strongpoint over a frontage of up to 400 meters; a motorized rifle squad is able to repel an attack by a tank (motorized infantry) platoon and defend a position with a frontage of up to 100 meters. A platoon defensive frontage of 400 meters is also made up of tactical standards of the frontage width of squads (100 meters each) and intervals between them (50 meters each). Having three squads, a platoon is able to defend a strongpoint with a frontage of 400 meters (3x100+2x50).

As far as the depth of areas (strongpoints) is concerned, here one should take into account the distance of the second echelon (reserve) from the first echelon (in a battalion) and subunits disposed in the depth (in a company, in a platoon).

Based on experience of exercises, in a battalion the distance of the second echelon from first-echelon companies is about 500 meters. It ensures the timely advance of the second echelon (reserve) for a counterattack, reinforcement of the defense of first-echelon subunits, and closing of breaches formed as a result of conventional fires delivered by the advancing enemy. On the whole, the total depth of the battalion defensive area counting the depth of dispositions of first-and second-echelon companies in this case will be 2-2.5 km.

The depth of the company strongpoint is created by echeloned disposition of platoon strongpoints. The forces and assets located in the depth of the company strongpoint must be disposed at such a distance so as to provide fire support for subunits on the forwardmost defensive positions and also provide cover for obstacles in front of them. Taking into account the range of effective fire of BMP's (BTR's), the depth of a strongpoint company for this indicator (requirement) will fluctuate between 80 and 1,000 meters.

The depth of a platoon strongpoint is created by echeloned disposition of squads (tanks), disposing in depth BMP's (BTR'), tanks, and other weapons, and also preparing alternate positions for squads and equipment and may be up to 300 meters.

(To be continued.)

Footnote

*For the beginning, see VOYENNYY VESTNIK, No 1, 1994.

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